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SOME PRACTICAL SUGGESTIONS ON THE EQUIP- MENT OF A PSYCHOLOGICAL LABORATORY.

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The kind of equipment a psychological laboratory is to have should be controlled by the needs of the students that are to use it, the amount of money at command, and the special lines of interest of the instructor in charge. To give detailed advice without detailed information on these points is impossible. It is hoped, however, that a few general suggestions with regard to rooms, apparatus and method of instruction, though without novelty to those already in possession of laboratories, may not come amiss to those having them in contemplation.

ROOMS.

This important part of the laboratory is unfortunately too often not under the control of those most interested. The laboratory must occupy such rooms as are free for it. As a younger member in the family of sciences, psychology must be content with the outgrown clothes of its elders. If any choice is possible several points should be regarded, and first of all, quiet. It is relatively easy to shield the eyes and skin from intrusive stimulation, but it is extremely difficult to shield the ears; and what freedom from jar is to the physicist, that freedom from noise is to the experimental psychologist. Heating, lighting and ventilation are important in all study rooms, and *a fortiori* in rooms where bodily conditions must

be kept constant and prevented as far as possible from disturbing mental conditions.

As to size, a number of small rooms are better than an equal floor space thrown into one or two large rooms, for there are not many psychological experiments that can be made simultaneously in the same room without mutual interference, and for the few that require considerable distances, it is better to depend on a spare lecture room or chapel. The most convenient arrangement is one large room for a general laboratory and apparatus room, and several small ones that can be used, though not exclusively, for special purposes: one for the instructor's private laboratory, one for light and color experiments, one for time experiments, a storeroom for bulky apparatus, and especially one for a work-shop, though this need not be adjacent to the rest. It is also convenient to have a small room or closet, suitably connected by wire with the other rooms, in which all batteries may be kept and cared for. There is a temptation to use the large laboratory room as a lecture room also, but this should be resisted on account of the dust from the blackboard.

The situation of the rooms is relatively unimportant, except in the case of rooms where light and color experiments are to be made, which should have a southerly exposure, so that direct sunlight may be had. Proximity to highly colored buildings or green trees is to be considered, and there should be no tinting on the walls. Rooms in an upper story of a large building have an advantage both as to light and stillness.¹

If it is inexpedient to devote a room exclusively to light and color, *i. e.*, to make a dark room of it, much can be done with dark boxes of convenient size; or, following the plan of the Yale laboratory, the dark box may be enlarged till it will take in the experimenter himself and becomes a room within a room. Such an arrangement has much to recommend it.

FURNITURE.

All the rooms should have gas or electric lights for illumination; the general laboratory and the work-shop should have gas for heating; and the first should have a sink and water. The general laboratory and the dark room should be provided with means for excluding light. For the first, where only a relative darkening is needed, black curtains or curtains of enameled cloth will answer, but an extra casing must be fastened to the window frame, covering the edges of

¹See plan of the Toronto laboratory where these points are regarded, *Science*, XIX, 1892, 143.

the curtains and preventing the light from getting in beside them. The curtains must pull up from the bottom, not down from the top. More pains will have to be taken with the dark room, and there solid shutters of some kind, painted black like the walls of the room, will probably be as satisfactory as anything.¹

Tables for laboratory use should not be so good as to be marred by an occasional tack driven into them. Some should be large (3x8 ft. or longer) and some small (2x4 ft.). If some are thirty-six inches high (for use when the experimenter stands), and others are six inches less (for use when he is seated), it will be well; and it will not be amiss if all are provided with drawers. It is convenient to have one or two very solid tables with square legs the same size at the top and the bottom, so that apparatus may be clamped to them. There should also be a few small tables that are adjustable in height. They are almost indispensable when several irregular pieces of apparatus are to be brought to the same level for combined use. Such tables with iron standards can be bought, or they may be made wholly of wood by any carpenter. A wedge to hold the table at the required height is better than a screw, for it does not mar the stem of the table and is more effective against wobbling. Three sizes at least are handy: a small size to stand on the ordinary tables and capable of adjustment from twelve inches to eighteen inches in height; a larger size capable of adjustment from twenty-four to thirty-six inches; and a third size adjustable from four to six feet. For a purpose similar to that of these tables the laboratory should have a good supply of smooth blocks, six or eight inches square and from one to two inches thick; also a few smooth bricks, which may be permanently covered with thick paper for greater cleanliness in use.

A shelf running along the side of the room and before the windows at about the height of the ordinary tables, is very convenient. If it seems undesirable to fasten such a shelf permanently, narrow tables or benches may well take its place. Chairs for the laboratory may be of any comfortable sort; physical discomfort is a serious hindrance to successful work for both the subject and the operator. There must be also a few screw stools, so that the height of the observer with reference to his instrument may be readily adjusted.

The number and character of the apparatus cases will be fixed by the apparatus to be placed in them, but they should be large enough to prevent crowding and some of them at

¹ Aubert gives some particulars about the construction of a dark room in his *Physiologie der Netzhaut*, pp. 26 ff.

least should be closed with hinged glass doors ; sliding doors are apt to strike and break apparatus carelessly put in.

Either below the apparatus cases or in a case by themselves, the laboratory must have a plentiful supply of drawers, and some of these should be divided by low partitions for the more easy keeping of such things as kymograph papers, small diagrams for optical experiments, etc. Drawers that are to contain many kinds of things, as, for example, the drawer for nails, screws and tacks, may conveniently be fitted with a number of little compartmented trays instead of fixed partitions. The trays can then be taken out and carried about with their contents as needed and again returned to their place in the drawer. Some of the drawers should be large enough to allow full sheets of cardboard to lie flat in them, unless they can be kept in a chart case.

In the matter of chart cases there is great diversity of practice. A convenient way where one has control of the making of his charts is to have them all drawn upon uniform sheets of manilla or other cardboard (using several separate sheets for large diagrams), and then have a case of shallow drawers in which to keep them. These drawers should have backs and sides, but no fronts, or fronts that are hinged and can be turned forward out of the way. In such a case the charts are kept flat and the edges of all can be easily examined without disturbing any. The front of the case can be protected by doors or a curtain.

Many colored papers fade if long exposed to the light and must be protected from it. A convenient way to do this with disks already cut for use on the color-mixer, and yet to have them easy of access, is to prepare a special case for them. A piece of pine plank two inches thick, somewhat wider and four or five inches longer than the diameter of the disks, has near one end a circular hole cut through it just large enough to take in the disks. From the side of this hole next the longer end, a slot an inch and half wide is cut nearly or quite to the end. A thin piece of board of the same size as the plank is nailed on for a bottom ; a similar piece is hinged on the top for a lid, and a narrow piece nailed across the end of the slot, if it has been cut entirely through, and the case is complete. When the colored disks are laid in, the different colors are kept separate by disks of ordinary cardboard. These have tongues that lie in the above mentioned slot (the longest ones at the bottom), each bearing the name of the color that has been put in below it. Any required color can then be found at once by lifting the tongue bearing its name.

In the general laboratory there should be a bookshelf containing the textbooks most frequently consulted, including a stand-

ard text-book of physics and a book of mathematical tables. And near by may well be kept a card catalogue of psychological literature. Such a bibliography, if contributed to from the reading of all users of the laboratory, would soon grow into a most valuable aid to research. In the cabinet may also be kept a card catalogue of the apparatus, giving the name of the maker, date of receipt and price of each piece, and in addition any constants or corrections that it may be necessary to know for the accurate use of the piece in question. This list will be found useful, not only in checking up apparatus at times of stock-taking, but also in giving students items about the manufacture of the apparatus that they may be interested to know.

APPARATUS.

If a carpenter and skilled machinist are at command, comparatively few pieces of apparatus will need to be bought outright, and much of the rest will be cheaper made at home. Even when such help is not forthcoming, the instructor himself, if moderately familiar with the rudiments of wood and metal work, can do a good deal. A certain knowledge of these arts is important, even for the successful use of boughten apparatus, and every instructor should take pains to acquire it. Such hand work will often be found an agreeable change from book work.

Assuming that the instructor has a little mechanical skill, and that professional mechanics will only be appealed to in cases of especial difficulty, the first room of the laboratory to be fitted up may well be the work shop. Here should be found a small bench with both carpenter's and machinist's vises, and the most common tools for wood and metal work. A lathe also should certainly be added, with a sufficient stock of chucks and lathe tools, though an excessively high-priced machine is not necessary. A hundred dollars expended upon tools of all sorts and fifty dollars more upon the fitting up of the room and the purchase of materials, would probably be sufficient, and would soon save its value in the making and repair of the strictly psychological equipment. If nothing of this sort is possible, a few tools at any rate are indispensable; large and small screw-drivers, a wrench, a hammer, with nails and tacks, a meter stick, and an oil-can are perhaps the minimum collection.

The strictly psychological apparatus to be purchased will vary with the plan of work and with the facilities for borrowing from the physical and biological departments. If, as is probably the case in most American colleges, demonstrations

are to be made before a class of twenty or upward, a practice laboratory course given to a less number, and research to be carried on by the instructor and one or two advanced students, and if the department is expected to stand on its own feet without much borrowing, the stock of apparatus may be somewhat as follows :

Apparatus for neurological demonstrations. Models of the brain¹ and sense organs; microscopes and mounted specimens; frogs; sheep's brains and facilities for removing and preserving them;² reagents; diagrams; to a total of about three hundred and fifty dollars.

*Apparatus for the senses.*³ Since a good part of the work so far accomplished in physiological psychology has been upon sensation and perception, this section of apparatus will naturally be pretty full, especially as many pieces are also of use for the study of the higher forms of mental life. For the senses of taste and smell a very small expenditure is sufficient. For the dermal senses and sensations of motion the apparatus, except for advanced research, is simple, and much of it can be made by any carpenter. An allowance of one hundred and fifty dollars should cover everything. For auditory experiments more refined apparatus is required. It would be easy here to spend two hundred and fifty dollars without exceeding the bounds of economy. Apparatus for vision and the visual perception of space, including in this a good supply of stereoscopic and other diagrams, would require perhaps three hundred dollars. Some allowance should also be made for apparatus for the study of pain, a promising subject as yet little investigated, making a total for all the senses of something over seven hundred dollars.

Time apparatus. A very successful means of study of the higher mental functions has been the measuring of their time relations. The standard instrument for this is the Hipp chronoscope, which itself costs about seventy dollars, and requires for full usefulness batteries, testing apparatus, electric keys, commutators, etc., to the amount of perhaps a hundred dollars more. Of almost equal importance and of more varied usefulness is the Ludwig kymograph, an apparatus for furnishing uniform motion, either to the drum that forms part of the apparatus itself, or, as a motor, to other light pieces

¹ See Notes on Models of the Brain, by H. H. Donaldson, AMER. JOUR. PSYCHOL. IV. 130.

² See chapter on the Structure of the Brain in James's briefer course on Psychology.

³ For detailed suggestion as to apparatus for the senses, I may refer to the introductions to the successive sections of my laboratory course in earlier numbers of this JOURNAL.

of apparatus. The instrument is delicate, and is expensive (it costs about two hundred dollars), but in very many lines of work its absence is a great loss. There are, however, a number of cheaper substitutes for it which could probably be made to answer most purposes, and even if a kymograph is included, it will be best to include also some simpler form of rotating drum to use when regularity of motion is not required. As in the case of the chronoscope, a good deal of accessory apparatus is required to get the full advantage of this central piece; there should be two or more electrical time-markers, an electrically excited vibrator and a tuning fork of 100 v. d. per sec., Marey tambours, etc., etc., with conveniences for smoking the paper-covered drums and fixing the tracings when made. For the chronoscope and kymograph and their appurtenances, an allowance of at least five hundred dollars should be made.

The *psychophysic law* may be studied with apparatus already included under the foregoing heads, but some new pieces or adaptations of those already mentioned are useful, and for them seventy-five dollars may be set aside.

General apparatus. In addition to the apparatus for more or less specific uses there is a class of general apparatus that is no less important; and chief among this class is a good-sized and substantial collection of stands, rods and clamps. Money spent on these will be well invested, as the later saving of time and exasperation will demonstrate.¹ There should also be included a number of black, white and gray screens that may be made to fit the rods and stands. A plethysmograph and sphygmograph should be in the collection. There should be some kind of a motor in the laboratory more powerful than the kymograph, electric or water, as convenient. A good set of drawing instruments, with brushes and colors, will find frequent use; also a number of beakers and flasks, several graduates and a pair of scales with weights. There should be a clock, towels, wastebaskets and slop jars, dust-pan and brush, several china plates, cloth for covering apparatus outside of the cases when not in use, and a good deal of other miscellaneous stuff, which, with the rods and clamps and the rest, may consume as much as two hundred dollars. In the laboratory should also be found a moderate stock of cardboard (black and white), colored papers, pins, needles and thread, mucilage, glass tubes and rods, alcohol, mercury, shellac varnish, sealing-wax, corks (rubber and ordinary), rubber tubing and sheets, hard rubber, shot, sheet lead, cotton batting, etc., etc., which might be covered by twenty-five or thirty dollars.

¹ On apparatus of this sort see AMER. JOUR. PSY. V. 476, 499.

The total cost of apparatus on the scale indicated, without allowing for the duplication that might be needed for large classes, is thus something above two thousand dollars, but no allowance has been made for transportation of imported apparatus (a large item), nor for such special pieces as would be desired for special original researches, nor yet for the fitting and furnishing the rooms. It is not an overestimate to say that a fully-equipped laboratory in an institution of college grade may be expected to cost between four and five thousand dollars. A sum from one hundred to two hundred and fifty dollars a year would be needed for supplies, repairs and the purchase of new apparatus, and these figures would have to be still larger if many students were engaged in research.

A beginning, however, can be made with a good deal less than five thousand dollars. In the hands of a mechanically skillful instructor a tenth of that sum spent upon tools and cardinal pieces of apparatus, though wasteful of the instructor's time, would give a very fair start, and even two hundred and fifty dollars spent on apparatus alone would do much to enliven and fructify the course in psychology. If a starvation appropriation is all that is to be had, the most satisfactory pieces would probably be: a sonometer and a few tuning-forks for audition, a color-mixer and Wheatstone stereoscope for vision (the latter home made), and a stop watch for time measurements.

ON THE USE OF THE LABORATORY.

Psychological experiments fall roughly into three classes: first, those that can easily be made by a large number of persons at once, as some experiments on hearing and vision, and also some on association and attention; second, those that can be made quickly and easily, but by only one person at a time without duplication of apparatus, including many experiments on touch, subjective visual and auditory phenomena, and binocular vision; and third, experiments that require a considerable time, including all the quantitative experiments, reaction-times, memory and memory span, psycho-physic law, etc., where the average of a number of individual tests is necessary to give a sure result. This difference will of course be recognized in planning the work of the department. It would be a great blunder to rob the lecture course of its illustrative experiments to crowd them into the laboratory. Experiments of the second class may well go into a demonstration hour in the general laboratory room following the lecture, when, without formality, apparatus may be passed from hand to hand and questions asked and explanations

given. To these also should be added some of the experiments of the third class, given in a demonstrational way, for the sake of students who do not follow the subject further. The third class of experiments in their rigor should be reserved for attack at another hour with those who wish serious laboratory work.

Most teachers, I believe, will find it difficult, at least in the present state of experimental psychological courses, to keep more than six or eight students profitably busy at the same time, especially at first, when some may have a merely spectacular interest in the subject. Larger numbers must be handled in sections.

In many psychological experiments it is necessary that two persons work together, one as subject and one as operator, and for this purpose a selection of partners for the course at the beginning is to be recommended. The order in which work is taken up in the laboratory is not of extreme importance, and if the apparatus contains no duplicates, as many lines of work must be started at once as there are partnerships of students. The following half dozen lines of work will illustrate what I mean, though every instructor will probably prefer to frame his own: 1. The senses, experiments not included in the lecture and demonstrational courses. 2. Reflex action and selected nerve-muscle experiments. 3. Reaction-times and related experiments. 4. Memory span for sounds, letters and numbers, and with distracted attention. Card sorting test for memory as described by Bergström in the last number of this JOURNAL, and possibly some adaptation of a few of Ebbinghaus's experiments with nonsense syllables. 5. Attention and its motor accompaniments, inversion of time order of sensations, as shown in Exner's and Dvorák's experiments. 6. Weber's law, with detailed work on some one method, with full demonstrations of the others.

In the prosecution of these and all other experiments, the art of the teacher will appear in leading the students to observe for themselves and to draw their own inferences. They should at the same time be shown how to keep intelligible records of their work. Indeed all the pedagogical principles already established for laboratory physics, chemistry and biology apply with equal force here, and very much of primary importance may be learned from experienced teachers of these subjects, both with reference to the furnishing of the laboratory and the handling of the pupils in it.

After so much of a general orientation as would be given by work in several of these lines, the student may enter upon original work as an apprentice to the instructor, serving alternately as subject and operator, and being

encouraged to contribute in every way to the success of the research and to feel a part of the responsibility for its scientific character.

At some place in the course, room should be found for the gathering among the class or the college at large of statistics of colored-hearing, number forms, lists of associated words, etc., not only as a means of interesting the pupils, but also as a means of giving them, in the proper working up of the figures, some training in the handling of statistics and some insight into the large fields of observational psychology in which the statistical method seems at present our chief resource.¹ To this, if opportunity offers, may well be added the observation of the behavior of certain lower forms of life and of the domestic animals, especially when young, and of children.

It is hardly necessary to say in conclusion that any one having the equipment of a laboratory in mind should not fail, even at some expense of time and money, to visit as many as possible of the existing laboratories and learn by direct inspection and conversation what his colleagues have found desirable and what is to be avoided.

¹ For accounts of such studies, though executed by instructors instead of pupils, see Jastrow, *Educational Review*, II. 1891, 442-452; Patrick, *Popular Science Monthly*, Feb., 1893; and the paper of Mary Whiton Calkins in this number of the JOURNAL OF PSYCHOLOGY.

A STATISTICAL STUDY OF PSEUDO-CHROMESTHESIA AND OF MENTAL-FORMS.

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In the spring of 1892, the Wellesley College class in experimental psychology began a study of cases of pseudo-chromesthesia and of mental "forms." A canvass of the college was undertaken and records of outside cases were also collected.¹ Since that time a few new records have been added and a very detailed investigation of all cases has been made, on the basis of a series of questions which were formulated after the careful study of the first records.. The results are summarized here with the briefest possible comment.

In the first table, reference is made only to the records from members of Wellesley College; and so large a number of persons have been consulted that the per cents may perhaps fairly be supposed to suggest the common prevalence of the phenomenon.²

¹ A short account of this work was given in the AMERICAN JOURNAL OF PSYCHOLOGY, Vol. V., No. 2. Variations of the present record from that are due chiefly to the new material collected; but occasionally to later, more detailed statements of the same subjects. The figures given, throughout this article, have been carefully verified, and every effort has been made to interpret accurately, through personal interviews, or through correspondence, the exact meaning of the subjects. Hundreds of letters have been written and scores of interviews have been held.

² Since the completion of this paper, a canvass has been made of the students who entered Wellesley in the fall of 1892. Its results differ remarkably from those of Summary I., in the far larger proportion of cases, both of pseudo-chromesthesia and of forms.

Of 203 consulted, the number of persons with pseudo-chromesthesia is	32 (= 15.7%)
Number of persons with forms is	61 (= 30.2%)
Number of persons with both is	17 (= 8.4%)

The result may be accidental, but it is possible, on the other hand, that among the two hundred or more, last year, whom our questions did not reach, was a relatively large proportion of subjects. It is proposed to attempt a mediation between the two results, by continuing this canvass with successive freshman classes.

SUMMARY I.

Comparative Frequency of Pseudo-chromesthesia and of Forms.

Total number of persons consulted,	525
Number of persons with pseudo-chromesthesia,	35 (=6.68%)
Number of persons with forms,	65 (=12.38%)
(Note: Number of persons with both,	18=3.42%)

The other summaries deal with all recorded cases, including those outside of Wellesley. The first of these attempts a sub-classification of

SUMMARY II.

Varieties of Forms.

(Total Number of Subjects, 85.¹)

	Verified.	Constant.	Unverified.	Total.
Month-forms.	55	13	5	73
Number-forms.	50	10	7	67
Day-of-week-forms.	23	23	4	50
Century-forms.	4	7	1	12
Hour-forms.	3	1	1	5
Alphabet-forms.	6	37	2	45
Totals.	141	91	20	252

In the first column of this summary are included cases in which the forms have been drawn in the same way after an interval (in most cases a year, occasionally only a few months) following the first record. A few cases are counted in which the second form varies slightly from the first (for instance, bends at the same number and at the same angle, but to the left rather than to the right). The second column contains the record of forms which did not appear on the first record, where the omission was a mere neglect and the subject explicitly testifies to the constant possession of the forms. The third column includes not only the unverified cases, but also those in which the second drawing of the form differs from the first.

Among the hour-forms and the century-forms are included only the cases in which these are unlike the number-forms; to most subjects the number-form is used for both series. The alphabet-forms are probably, most of them, mere visual

¹ Evidently the record of the same subject appears often under several of these heads.

reproductions of the primer page, so that they hardly belong to our summary.¹

A few curious forms are not included at all. Among these are forms for piano notes (squares), with lines for violin notes; and an interesting prayer-form, well remembered from the time when the progress from one prayer to another was always the passage from one part into another of the form.²

The next table is a classification of

SUMMARY III.

Varieties of Pseudo-chromesthesia. (Total Number of Subjects, 45.³)

Color with letters:

With consonants only,	5 ⁴	
With vowels only,	4 ⁴	
With both vowels and consonants,	20	
		29 cases.

Color with the numerals:

10 cases.

Color with words:

With common and proper terms,	20 ⁵	
With common terms only,	1	
With proper names only,		
Names of people only,	7	
Names of days only,	1	
Names of months and days,	1	
Names of people, months and days,	8	
		17
		38 cases.

Color with music:

With notes of different pitch,	8	
With different pitch and different instruments,	3	
With different composers or compositions,	4	
With other varieties and combinations,	8	
		23 cases.

Total varieties of pseudo-chromesthesia, 100³ cases.

The connection of particular colors with the different letters is a widely varying one. All the associations seem fortuitous, except possibly that of *i* with black and of *o* with white. Dr. Jordan⁶ explains this as certainly due to the

¹ But there are some distinctive alphabet-forms. Cf. Fig. 3, Plate I.

² See also Fig. 7, Plate I.

³ Evidently the record of the same subject often appears under several of these heads.

This contradiction of Galton's generalization has already been noticed. AMERICAN JOURNAL OF PSYCHOLOGY, Vol. V., No. 2.

⁵ There are four cases of color with *all* words.

Cf. D. S. Jordan, *Pop. Sci. Mo.* XXXIX. 67.

appearance of the letters; but, in the case of *o*, an explanation given in one of my records seems equally plausible, and is interesting because the subject is now blind.¹ "*o*," she says, "*=* cipher *=* blank *=* sheet of white paper."

SUMMARY IV.

Colors with Different Letters.

<i>I. With i:</i>			
<i>i</i> is black in			11 cases.
<i>i</i> is "nearly black" in			4 "
<i>i</i> is grey in			3 "
<i>i</i> is "white" or "light" in			2 "
<i>i</i> is cardinal in			1 case.
Total cases of color-associations with <i>i</i> ,			21
<i>II. With o:</i>			
<i>o</i> is white in			11 cases.
<i>o</i> is "greyish-white" in	3	} nearly white in 7 "	
<i>o</i> is "bluish-white" in	1		
<i>o</i> is "colorless or white" in	1		
<i>o</i> is "white or yellow" in	1		
<i>o</i> is "light" in	1		
<i>o</i> is grey in			1 case.
<i>o</i> is "golden-brown" in			1 "
<i>o</i> is black or "very dark" in			2 cases.
Total cases of color-associations with <i>o</i> ,			22
<i>III. With a:</i>			
<i>a</i> is blue in			7 cases.
<i>a</i> is red in			4 "
<i>a</i> is of other color in			11 "
Total cases of color-association with <i>a</i> ,			22
<i>IV. With e:</i>			
<i>e</i> is yellow in			8 cases.
<i>e</i> is of other color in			15 "
Total cases of color-associations with <i>e</i> ,			23
<i>V. With s:</i>			
<i>s</i> is yellow in			6 cases.
<i>s</i> is red in			3 "
<i>s</i> is "red or yellow" in			1 case.
<i>s</i> is "yellowish-red" and "reddish-yellow" in			2 cases.
<i>s</i> is of other color (blue 4 times) in			10 "
Total cases of color-association with <i>s</i> ,			22

The relative frequency of the connection of the color with the sound or with the appearance of letter or word has been carefully studied. Of course in the cases of merely musical association—except in the few of color with the printed notes

¹ One of the two records from students of Perkins Institute.

—the color follows the sound; and probably this is also true where merely the vowels or merely the consonants have color, since the distinction here is one of sound, not of appearance. On the other hand, in cases of association with numerals (as distinguished from the names of the numbers), the color follows the appearance. In the remaining varieties, we find the association of color with sound most frequent; so that the name "colored-hearing" is partly justified.

SUMMARY V.

Connection of Color with Sound and with Appearance.

a. COLOR WHEN LETTER OR WORD IS						b. COLOR WHEN LETTER OR WORD IS IMAGINED AS					
Heard (only).	Seen only.	Both.	Total.	Unv.	Total. Cases.	Heard.	Seen.	Both.	Total.	Never.	Total. Cases.
14	1	28	43	2	45	11	1	27	39	4	45

To discover exactly the manner in which the color appears to a subject is very difficult. To some the color is so indefinite that it is almost impossible for them to describe it; but to a larger number, the experience is so clear that they assume its universality and can hardly be prevailed upon to describe it in detail. "It was not recorded last year," one subject says of her month-form, "because I did not realize that so simple an arrangement could be a 'form.'" Great care has, therefore, been exercised to make these results correct interpretations of actual experience.

In the following summary, column (a) includes cases in which the color appears as a background to letter or to word; (b) those in which each letter is colored (as if printed in colored ink); (c) those in which the letters are colored, but of one color; (d) that larger number of instances in which the color appears in more or less vague form—not that of the letters—either after or with word, music¹ or letters: evidently this class contains all cases of musical color-association.

¹In one of this year's records the music-color is thus described: "I imagine a prismatic band somewhere around the keys (I can't decide whether it is over or under them)."

SUMMARY VI.
Manner of Word-color.

(a)	(b)	(c)	(d)	(e)	Total.	Unv.	Total Cases.
1	4	9	19	3	36	2	38

The connection in cases of letter and word-association between the coloring of words and that of their letters, is peculiarly baffling. It is impossible to reduce it to rule; often, in spite of definite associations of color with the letters, the word has a color different from that of any of the letters composing it. Very often such a word, with independent color of its own, may be made to assume the color of its various letters by mentally fixating each of these; but this is ordinarily at the expense of any appreciation of the word as a whole. In the next summary, numbers under (a) refer to cases in which the word follows the color of its initial letter; under (b) and (c) to those in which the color seems to be that of a predominating vowel or letter; under (d) to those in which each letter retains its color. The class of associations in which no connection is traced between letter and word-coloring is marked by (e). It will be observed that, followed closely by this class of the undetermined, the one in which word-coloring follows the initial is best filled. Since the word-colors of the same subject may be determined at different times by different principles, the same "case" may be recorded under more than one of the headings. These double records are indicated in the table by a (?), which is meant to suggest that few words of the subject belong to the given category. No cases are twice counted in the totals.

SUMMARY VII.
Connection of Word-color with Letter-color.

(a)	(b)	(c)	(d)	(e)	Total.	No Letter-color.	Total.
?	?	?	?	?			
9[4]	5[2]	4[2]	1[3]	8[5]	27	11	38

The value of our records, in explaining the phenomenon which they describe, must be admitted at the outset to be suggestive rather than demonstrative. Of possible theories there are, of course, two, which may be roughly characterized as the psychical and the physiological. The first refers

pseudo-chromesthesia and mental forms to ordinary associations, probably of childhood. The second finds no explanation, except in an assumed cerebral peculiarity—an especially close connection between certain brain tracts, especially the visual and the auditory. This assumption of the existence of apparently inexplicable brain peculiarities is, however, little more than a confession of ignorance; and the psychical theory will evidently be preferred, if it can be substantiated. But it is difficult to draw positive conclusions from the assertion or from the denial by adult subjects of such possible explanations; for, on the one hand, it is entirely probable that many actual associations are forgotten, while conversely, it is possible that plausible explanations are imagined and then assumed in good faith as the actual ones. It is at least certain, as the following table shows, that almost all color-associations and forms date back to childhood.

SUMMARY VIII.

Beginning of Pseudo-chromesthesia and of Forms.

	IN CHILDHOOD.		LATER.		TIME ¹	BOTH ²	TOTAL	UNV.	TOTAL CASES
	Surely.	?	Surely.	?					
Pseudo-chromesthesia began	29	1	1		12	2	45	0	45
Forms began	48	7	3	3	21	3	85	0	85

In the case of pseudo-chromesthesia, the number of explanations actually offered are recorded in

SUMMARY IX.

Explanations of Pseudo-chromesthesia.

	EXPLANATION		TOTAL	NO EXPLAN.	UNV.	TOTAL CASES
	Sure.	?				
Color with words (including some letter and music-associations).	3	10	13	12	2	27
Color with words only.	3	4	7	3	1	11
Color with letters only.		1	1	1		2
Color with music only.	3		3	2		5
Totals.	9	15	24	18	3	45

¹ Doubtful.² Part of the color-associations (or forms) in childhood; part later.

This result is less significant than it appears to be. The greater number of explanations are, as is shown, doubtful or partial, including such as these: "When I was three years old, I had a playmate named Ethel, who had the loveliest blue eyes I have ever seen. She made such an impression upon me, that now the word Ethel seems almost a synonym for blue;" and this other: "'Harry' may be 'yellow' because associated with an imaginary Harry, with yellow curls." Color-associations with music seem most easy to explain and are in great number accounted for through a sort of emotional middle term; the connected color and sound are those which are apt to occasion similar emotions. A typical instance of this emotional connection between music and color is this one: "Color-hearing of musical sounds is due almost entirely to emotion. When I hear that which produces a pleasurable emotion, I immediately prolong this by seeing those colors which would produce the same emotion." "The tone of a violin," another says, "is very pleasurable, and blue is my color for my happiest moments." The explanation is still more detailed in the following quotation, which, however, suggests rather a deliberate connection: "As one naturally translates a lovely thought of one language into another, so the beauty of music was expressed in color . . . I am naturally fond of red, which forms the foundation of my musical association, intensified into black and etherealized into pink; mixed with blue, for the passionate purple, and bothered with yellow to make the sullen and bitter discord of vermilion." The exact figures are these:—

SUMMARY X.

Explanation of Musical Color-associations.

EMOT'L ASS'N.	ORD'Y ASS'N.	BOTH.	NO EXPLAN.		TOTAL REC.	UNV.	TOTAL CASES
			Sure.	?			
9	1	4	7	1	22	1	23

It is significant, on the other hand, since color with letters (regarded as sounds) seems obviously a simpler and more primary sensational experience than color with words, that we have but one direct explanation, and that a doubtful one, of a letter-color. This is given by a person who connects *ë* with yellow or red and *ê* with green, and the suggestion is that the pronunciation, spelling and meaning of the words

green, red and yellow may be the cause of the color-association. Now, most instances of pseudo-chromesthesia include both letter-color and word-color, and in half of these the word-color is at least partly explained by some ordinary association. It is not unlikely, therefore, that the letter-color is often the secondary experience and that letters take their colors from representative words. The figures are these:—

SUMMARY XI.

Connection of Letter-color with Word-color.

LETTERS ARE	CONNECTED WITH WORDS.		UNCONNECTED WITH WORDS AND		TOTAL.	UNV.	TOTAL CASES.
	Explained words.	Unexplained words.	Explained	Unexplained			
	13	11	1	1	26	2	28

The lack of uniformity already noticed in the color-associations of different subjects with the same letters, implies, of course, the individual nature of the association and may point toward this same explanation of letter-colors through word-colors. The theory of Mr. Stevens¹ best suggests the possible connection between these colors and the childhood experience. He supposes that the color of each letter may be that of an object of whose name this letter is the initial. It is undoubtedly true that to all children the familiar horse, dog or bird is the typical one. If the sound of the word "dog" first suggests to an imaginative child his father's Irish setter, then the sound may be closely connected with the color brown; when the letters are learned, *d* stands for dog and takes on the color of the "dog par excellence." It must be remarked that this theory, ingenious as it is, still accounts with difficulty for some of the phenomena, for instance, for the vivid colors, red, green and yellow of so rare a letter as *q*; or for the red, black and yellow of *z*.

Definite explanation of forms, by identification with the shapes of familiar objects, occurs rarely in our records. Including even doubtful cases, only about twelve per cent. of our forms are explained.

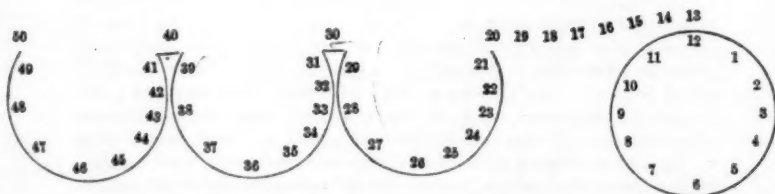
¹ *Pop. Sci. Mo.* March, 1892.

SUMMARY XII.

Explanation of Forms.

	EXPLANATION.		TOTAL.	NO EXPLANATION.	UNV.	TOTAL CASES.
	Sure.	¹				
Month-forms.	6	5	11	57	5	73
Number-forms.	7	4	11	49	7	67
Day-forms.	1	2	3	44	3	50
Century-forms.	1		1	10		12
	15	11	26	160	15	202

Yet most of these explanations seem more obvious and satisfactory than those offered in cases of pseudo-chromesthesia. The following, for instance, has an interesting history:



The subject says: "I cannot explain the origin of the almost straight lines between 12 and 20, but the curves came from the fact that I learned to tell time before I learned to count, and when I did learn, everything reverted to the picture of that old clock."

It is evident, however, that if the psychical theory were supported merely by the fact of these remembered associations, it could claim little value. But the natural childhood associations which it hypothesizes may certainly have existed, though they are now forgotten. An observation of the forms themselves shows that they are chiefly those of ordinary objects, always frequent and sometimes prominent in the child's environment. The classification is the following:—

¹ Doubtful.

SUMMARY XIII.
Nature of Number-forms.

SIMPLE STRAIGHT LINES.	BROKEN LINES.		CURVED LINES.		TOTAL REC.	UNREC.	TOTAL.
	Simple.	Complex.	Simple.	Complex.			
17	15	16	7	5	60	7	67

Of Month, Day and Century-forms.¹

	STRAIGHT LINES.		CIRCULAR.		RECTANGULAR.		TOTAL REC.	UNREC.	TOTAL.
	Straight	Broken	Circles	Curved	Squares	Rectangles			
Month-form.	7	3	23	22	7	6	68	5	73
Day-form.	21	7	1	8	—	10	47	3	50
Century-form.	4	3	—	2	1	1	11	1	12
Total.	32	13	24	32	8	17	126	9	135

A classification of the points at which number-forms bend also bears on this probable explanation by showing that three-fourths of these turns are at numbers which are prominent in early arithmetical exercises and in ordinary usage.

SUMMARY XIV.

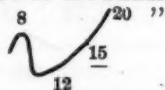
Turns of Number-forms.

At 5 and its multiples,	1
At 10, and at 10 and multiples,	17
At 12; 8 and 12; and 10 (and 10 with multiples),	8
At 20; 20 and multiples of 10,	5
At 100 and multiples,	1
Combinations of these forms,	5
Turns at each number,	1
Irregular turns,	8
Total,	46
No turns,	13
Total recorded,	59
Unrecorded,	9
Total,	68

¹For examples of these forms, Cf. Figs. 1, 2, 4, Plate I.

Among the eight under the head "irregular turns," occur some so peculiar in form as to defy all identification with childhood objects, yet even these include many bends at the familiar 10's and 12's; and it is not unlikely that turns at such numbers as 6, 8, 15, 19 and 27 might be explained by some fact of great importance to the childish mind, by the consuming admiration for a playmate who is eight years old, or by the impressive death of some one at twenty-seven.¹

The argument from utility,² which treats the "form" as a survival of a useful device, may finally be emphasized in support of the psychical theory. The visualization of numerals or of word-series may be an important aid to memory, especially in a child's first struggle with numbers. Accidental associations of this sort may then be perpetuated because of their helpfulness. This genesis of forms is explicitly recognized by one subject, who says, "the other forms have arisen simply from the ways that I have used to remember." There are many more emphatic assertions of the usefulness of forms. "I cannot realize," one man writes, "how any one can dispense with something of the kind. It seems to me that without this form, numbers would have no meaning, and a person would be entirely lost in considering them." "In the study of history," a student says, "I always associate events or men with the century which stands in such a place on the form. For instance, Queen Elizabeth reigned in the middle of the fifteenth century, which stands thus



"When I add numbers," writes another, "I invariably think of my form, *e. g.*, if I add 5 to 27 . . . I feel as if I passed on a step. When I multiply, I feel as if I jumped, as it were, from one place to another, *e. g.*, 6×9 is a long jump compared with 3×6 ." Even the musical memory may be aided. "If I hear an opera," one subject says, "I can come home and almost play it by colors; I know what chords make a certain combination of colors."

The rare occurrence of distinct alphabet-forms may be explained on this principle as due to the fact that "the child needs no mnemonic system by which to learn the letters. He already sees them before him on blocks or in picture-books. Moreover, the alphabetic sequence is not so important as the numerical sequence."³

¹ Some such irregular forms are shown in Figs. 5 and 6, Plate I.

² Cf. G. W. T. Patrick, *Pop. Sci. Mo.* Feb. 1893.

³ Extract from an essay by Blanche L. Clay.

The following table shows the relative number of those that are sure that they have been helped by the possession of forms:—

SUMMARY XV.

Utility of Forms.

	UTILITY.			NO UTILITY.			UNV.	TOTAL CASES.
	Sure.	?	Tot.	Sure.	?			
Usefulness of month, day and century-forms, in remembering dates and appointments.	27	4	31	39	5	3		76 ¹
Usefulness of number-forms both in remembering dates, etc., ² and in mathematical operations.	29	5	34	21	5	7		67

Whether or not one admits, as I have been arguing, that the forms which correspond with familiar shapes and those which are of acknowledged use to the possessor, as well as those which admit of definite explanation, are likely to be due to psychical associations,—it is yet worth while to observe that all these forms may be classified under one, at least, of these classes, while most belong to more than one.

The helpfulness of pseudo-chromesthesia is less obvious, yet it is reported in about one-fourth our cases. "Colors do not look right," one subject writes, "unless a word is spelled right. For instance, I spelled permanent, the other day, with two a's, and it did not look pale enough." Another is helped in writing rhymes, and a third in committing music to memory.

The pleasurable nature of the experience also is very general, and may be a reason for its perpetuation. In several instances, already quoted, the favorite color has been definitely recognized as the basis of all the color-associations. The positive pleasure of this color-experience is naturally greater, as appears from the last part of the following table, than that derived from the usually simple and pre-eminently useful "forms."

¹The number refers to subjects, not to different forms.

²In the cases in which number-forms are used as year-forms or as day-of-the-month-forms.

SUMMARY XVI.

Psychical Value of Pseudo-chromesthesia.

	YES.			NO.			NEITHER	BOTH DIFF'T TIMES	TOTAL	UNV.	TOTAL
	Sure	?	Total	Sure	?						
1. The subject's memory is helped.	10	3	13	30		1			44	1	45
2. The subject is fond of the associated colors.	13	8	21	12	2	8			43	2	45
3. The subject finds pleasure in the experience.											
(a). Of pseudo-chromesthesia.	14	11	25		1	13	4		43	2	45
(b). Of forms.	24	9	33	1	5	46			85		85

The diminution of both phenomena is slighter in our subjects than is usually supposed, perhaps because of their comparative youth; it suggests the effect of lack of attention when the experience has become monotonous and has outlived its usefulness.

SUMMARY XVII.

Relative Increase and Decrease

	INCREASE.		DECREASE.		BOTH.	NEITHER	?	TOTAL	UNV.	TOTAL.
	Sure.	?	Sure.	?						
Of pseudo-chromesthesia	4	2	9	3		18	7	43	2	45
Of forms.	14	5	6	6	1	39	14	85		85

The hereditary tendency of colored-hearing and of forms indicates, of course, the importance of the accompanying cerebral changes. Including doubtful ones, the number of negative cases is probably far too high,¹ since in many cases one person has answered for an entire family, while, in almost all, there has been no opportunity for careful investigation.

¹ The cases under "No?" are merely those in which the subject has no knowledge that members of his family have forms, etc.

SUMMARY XVIII.

Hereditary Tendency.

Do members of a family have

a. PSEUDO-CHROMESTHESIA?								b. FORMS?							
ANSWERS.	Yes.		No.		TOTAL.	UNV.	TOTAL CASES	Yes.		No.		TOTAL.	UNV.	TOTAL CASES	
	Sure	?	Sure	?				Sure	?						
1. Of subjects with pseudo-chro. only.	2 ¹		9	10	21	1	22	0		8	12	20	1	21	
2. Of subjects with forms only.	5		14	42	61	1	62	24	24	6	7	61		61	
3. Of subjects with both.	5	1	4	13	23		23	7		4	13	24		24	

The remaining tables embody the answers to questions of less importance, yet of a certain interest. It is not surprising to find that nearly all our subjects are good visualizers, but it is more remarkable that nearly all of them draw or paint.²

SUMMARY XIX.

Colors with Odors, Tastes and Touches.

Visual Imagination.³

	Yes.		No.	TOTAL.	UNV.	TOTAL CASES	Yes.		No.	TOTAL.	UNV.	TOTAL CASES
	Sure ?						Sure ?					
Subjects with pseudo-chro. only.		1	17	18	3	21	11	7	1	19	2	21
Subjects with forms only.	1	2	58	61		61	52	5	3	1	61	61
Subjects with both.	1	3	20	24		24	23		1	24		24

¹Color-association with odors.²This question was asked by MM. Beaunis and Binet of their subjects. Cf. *Revue Philosophique*, April, 1892.³See note 3 on page 454.

SUMMARY XIX.—Continued.

Drawing or Painting.³Dramatization.⁴

	Yes.		No.	TOTAL.	UNV.	TOTAL CASES	Yes.		No.		TOTAL.	UNV.	TOTAL CASES
	Sure.	A little.					Sure ?	?	Sure ?	?			
Subjects with pseudo-chro. only.	5	4	10	19	2	21							
Subjects with forms only.	16	11	34	61	61		7	4	72	1	84	1	85
Subjects with both.	7	11	6	24	24								

Under the head "Dramatization" are included some simple cases in which, for instance, certain numbers or days are essentially disagreeable or "sharp and keen." There are, besides, more elaborate personifications, like the following:—

"T's are generally crabbed, ungenerous creatures. U is a soulless sort of thing. 4 is honest, but mathematically angular and ungraceful. 3 I cannot trust, though it is fairly good-looking in personal appearance. 1 is dark in complexion. 9 is dark, a gentleman, tall and graceful, but politic under his suavity."

"For numbers, I entertain either a like or a dislike; for instance, 11, 13 and 17 are especially disliked, I suppose because they are prime. My feeling for 11 is almost one of pity."

"The letters are very individual, for instance, K seems like a young woman, a friend of L, which seems like a daughter to M. N seems to be a sort of maiden aunt, sister to M. O is a young man connected with M as a nephew. He connects M and N with P, an older friend of his. Q is odd and stands by himself as rather an eccentric middle-aged man. R is like a maiden lady, an advisory friend of S, a young, handsome girl. T is the devoted admirer of S."

To one person, written capital letters have different expressions according as they are made in different ways, for

³In the investigation of forms, both these questions were divided, with the following result: One-fourth of those with good visual imagination of form do not strongly visualize color; and about one-ninth of those who draw do not also paint.

⁴I am inclined to think that this summary over-states the negative, for those who answered the question in writing may have misunderstood it. The question was not asked of subjects of pseudo-chromesthesia.

example, one style of written *I* is "honest and well-intentioned, but dictatorial and overbearing," while, written in another fashion, *I* is "a crabbed old miser." The subject adds: "This feeling is so strong that at times, when I have wished to produce a certain impression by a certain sentence, I have noticed that the capital letter at the beginning looked so at variance with the tone of the sentence that I erased it and made it in a different way, in order to keep the harmony."

The results of this paper, so far as they are not merely a summary of statistical observation, may be briefly summarized: We have no direct proof for the psychical theory of forms or of pseudo-chromesthesia. An examination of the different forms shows us, however, that most of them may be plausibly explained by the hypothesis of forgotten childhood-associations; and this probability is increased by the fact that such associations would be useful in learning the number series and in remembering dates.

Musical color-hearing and some name-associations are explained in the same way. Color with the letters may also be accounted for by arbitrary and forgotten childhood-associations; but it is possible that the explanation in this case is primarily a cerebral one. In general, however, such color-associations are either useful or pleasant, so that, even if their occasion be cerebral, their continuance, both in the individual and in the family, is largely due to attention and to cultivation.¹

APPENDIX.

The descriptions, which follow, of special cases are extracts (except the final one) from essays by different students. The last two are records of self-observation; the others embody the results of personal investigation.

PSEUDO-CHROMESTHESIA.

CASE A.

Miss A. is a girl about nineteen years old, who says that she has had this experience ever since she can remember, but that it has never occurred to her as anything unusual. She sees the color only when she hears the letter or word, that is, when someone else speaks it; when reading, unless she stops to say the word to herself, she has no impression of color.

The phenomenon manifests itself with her, especially with the letters, both vowels and consonants, and with words only in so far as the initial letter throws the color over the rest. For example, as *a* is blue, Alice is blue, and because *s* is yellow, Sunday is yellow. The same rule holds good of figures; 2348 would be red, because 2

¹I am indebted for many suggestions in the collection of statistics and in the discussion of theories to my friend and former student, Miss Helena M. Corey.

is red. There are, however, some exceptions. When there are two consonants at the beginning of a word, their colors frequently blend, producing a color which is a combination of the two, for instance, in the word Thursday, the color is a red-brown, a combination from *t* which is red, and *h* which is brown. Moreover, there is a strange exception in the name Monday, which appears blue, while *m* is a decided red. Miss A. says that she cannot account for this, unless the association of blue with Monday in "blue Monday" replaced the original color red, and became more firmly fixed in her mind than the color produced by *m*, the initial letter.

There seems to be no especial arrangement of the letters according to color, although the same color is often repeated in the course of the alphabet. For example, *d, f, n* are all brown, whereas *f, k, w* are steel-gray. Each letter has a distinct color of its own, apparently without reference to form or sound. But it sometimes happens that letters with somewhat the same form have the same color, for instance, both *o* and *c* are white, and the figure zero is white also, while the figure 1 and the letter *i* are both black, but 3 and 6 are black also, and they differ so totally in form that the rule will not hold good in their case.

To illustrate further that the sound of the letter has no influence, I asked Miss A. about the colors of "ought" and "aught," and she said that "ought" is white, while "aught" is blue, following the rule of the initial letter.

The colors corresponding with the letters and numerals are as follows:—

- a, b*, and *8*, blue.
- e, u, g* and *x*, tan or dark *écru*.
- t, h, p, l, 3, 6*, black.
- o, c, 0, 10*, white.
- d, j, n, 9*, brown.
- f, k, w, 11*, steel-gray.
- i, r, z*, steel-blue.
- m, 4, 2, 5*, red.
- q, s, v, y, 4, 7*, yellow.

Most of the colors, it will be observed, are of the softer, more sombre hues. Some of them, however, are more distinct than others, for example, the red, blue and black, of which the red is by far the most vivid, apart from its being the brightest color.

But the more subdued colors, especially those in the *écru* shades, are almost indescribable. They are so vague and indefinite that it is hard to give them any name.

Miss A. does not usually see the letters or words themselves colored; she has merely a vaguely outlined image in the characteristic color, when the word is spoken, for instance, with the word "other," she sees a sort of "streak" of white. But the very vivid colors affect the letters themselves, for example, *m* and *t* always seem red to her.

The subject has no explanation to offer. She thinks, however, that her colored-hearing cannot be the result of early association, because the colors have been produced only gradually, and have increased with time instead of fading, as might more naturally be the case if this were a mere childhood-association.

MARY L. SMITH.

CASE B.

Miss B. is also about nineteen years old. She has had colored-hearing ever since she was a child, long before she could either

read or write. With her, however, colors were first associated with names and only later, since she has thought about the matter, has she associated colors with the letters of the alphabet. B.'s mother first noticed the peculiarity, when she was asked to suggest names for the marbles with which the child was playing. The mother proposed names, but B. rejected most of them as unsuitable, because, she said, they were not of the same color as the marbles. This incident impressed the mother as very curious, for she does not know that any others of the family have colored-hearing. She had never, however, spoken of it particularly until B., who did not remember the experience, began talking about colored-hearing, a few weeks ago.

Miss B.'s colors, for the letters, are these:—

a, blue.	p, dark blue.
e, yellow.	q, dark red.
i, dark red.	r, brown.
o, light gray.	s, dark blue, almost black.
u, scarlet.	t, still darker blue.
b, black.	v, dark navy-blue.
c, yellow.	w, red.
d, dark red.	x, green.
f, yellowish-brown.	y, cream-color.
g, brown.	z, dark, almost black.
h, cream.	
j, brown.	
k, dark blue.	
l, red.	
m, brown.	
n, deeper brown.	

Miss B. sees colors with all letters and with almost all words, but the association is most marked with proper names. The following are her "month-colors":—

January, red.	July, deeper red.
February, straw-color.	August, sky-blue.
March, blue.	September, brownish-yellow.
April, purple.	October, light yellow.
May, gray.	November, bluish-gray.
June, red.	December, reddish-brown.

The word may be spoken or written; but the color does not always appear with an imagined word. No other sounds of the human voice or of musical instruments ever suggest color. There seems to be no rule, such as that of the initial letter, for the association of colors with words, but each separate word and letter has its distinct color, and if the colors seem to be duplicated there is a decided difference in the shade. For instance, Sarah and Stella, which have the same initial letter, are totally different in color, the former a bright blue, and the latter corn-color. Harry, which has almost the same sound and in great degree the same letters as Carrie, is dark red, while Carrie is a very dark blue, almost black. If we compare these with the colors of the letters, we still get no explanation of the coloring.

MARY L. SMITH.

CASE C.

Miss C.'s colors for vowels are as follows:

a, dull gray.
i, nearly black, very dark green.
o, nearly colorless.
e, dull red.
u, dark bottle-green.

Her colors for consonants are these:—

b, brown.	g, dark green.
c, vivid lemon-yellow, the brightest letter of all.	r, deep brown.
d, dark brown.	s, white with brown spots; (in combination) pink.
f, ruddy brown.	t, bright green, a very clear color.
g, purple.	v, fawn-color.
h, greenish-yellow.	w, heliotrope.
j and k, no color.	x, black.
l, dull gray.	y, mixture of lavender and blue, Dutch-blue.
m, brown, especially distinct.	z, yellowish-drab.
n, nut-brown.	
p, lead-color (tint of purple).	

It is noticeable that many of Miss C.'s colors are of a dark shade; she says that the colors were much more distinct in childhood and it is possible that they have lost something of their original brightness. Upon being asked whether the impression of color comes when the word is merely heard, or when read and imagined, Miss C. replied that it comes when imagined and when heard, never when the printed page in black and white is before her, unless she stops to imagine the word or letter. The black and white seem to dispel the colors. The colored spoken letters do not seem quite so distinct as those which she imagines. No other sounds than those of letters and of words produce any color, and the quality of the voice does not make the slightest difference in the colors, which are the same in connection with all voices. Her own moods have no effect on the colors.

The separate letters of a word are all themselves colored and on a rather dark background. In most cases the color comes from the first letter, but very often the word is shaded; this effect does not usually come from combination, but each letter is seen as a separate one, in its own color. These statements have been verified. The word "Carrie" appears to Miss C. a bright yellow, influenced no doubt by the c, which is lemon. "Harry" is greenish-yellow, the exact shade of h. Here the similar sound of the words (irrespective of the initial letters) seems to have no influence. "Helen" is dark green, influenced by h and perhaps somewhat by l, a dull gray; this seems like a combination of the two colors. "Stella" is one of the few shaded words, a very delicate pink, shading into a dull green. I am sure that this comes from the combination, for s (white with brown spots, when isolated) is invariably a very dull or delicate pink when with other letters; e is a bright green, and in combination with l and a, dull gray, would very likely give dull green.

The subject occasionally finds that in trying to think of a word, the flash of color comes just before the word, though, until questioned, she had never thought of the significance of this experience as an aid to the memory. These flashes, however, occur very seldom. The word-color has existed ever since she can remember; in childhood, it was often a source of amusement and she never doubted that other people associated colors with words and letters. She is the only one in her immediate family who has colored-hearing; until her attention was called this spring to the peculiarity, she had never mentioned it at home, and her family were much surprised at her experience.

Miss C. can offer no theory of colored-hearing, but the fact of having learned one's letters from blocks is not a satisfactory

explanation, since it would account for only a few colors, which should then be often repeated with the different letters.

AGNES M. SHAW.

CASE D.

The subject is a girl about nineteen years old, who has always been in the habit of seeing colors in connection with all letters of the alphabet, including Greek letters, with words made up of these letters and with figures. The complete list of the associations follows:—

a, light brown.	l, blue-black.
e, reddish-yellow.	m, brown.
i, black.	n, gray.
o, white.	p, dark blue.
u, cloudy white.	q, blue-black.
b, dark brown.	r, grayish-white.
c, white.	s, reddish-yellow.
d, dark blue.	t, blue.
f, brown (F gray).	v, dirty white.
g, dark blue.	w, brown.
h, brown.	x, red.
j, black.	y, grayish-white.
k, light blue.	z, red.

The words and consonants seem to be about alike in clearness, but the capital letters, besides being larger, are more distinct and appear brighter and more conspicuous than the others; sometimes they even assume different colors or shades, as in the case of small *f*, which is brown, while capital *F* is gray, or, as in the case of small *q* and capital *Q*, which are different shades of blue. There is also a marked difference in shade between written and printed letters, so that *i*, *l*, *z* and *L* have different shades. Miss D. thinks that the distinction is due to their difference in shape.

There seems, however, to be no difference in shade, according as the letters are spoken or written. If a word is spoken quickly, it immediately assumes the color of the initial letter, but if the word is imagined, or slowly repeated or read, then not only the initial letter, but all the letters assume colors, so that a printed page seems to be illuminated; the letters are not on a colored background, but each stands out for itself in its own individual color. (Therefore, if, in an illuminated text, letters thought of by the subject as, perhaps, brown and white, are made, for instance, red and black, they do not appear natural, and must either be re-colored or be printed in ordinary form to suit her taste.)

The subject has no explanation or theory of her colored hearing. The experience is not hereditary and is not connected in any way with childish associations of which she is conscious. She does not think that the colors can be closely connected with the sounds of the letters, for two letters sounding precisely alike are represented by very different colors, and two words pronounced alike, but spelled differently (as *aught* and *ought* or *air* and *heir*), appear very dissimilar when seen in colors. She thinks the color more likely to be associated with the form of the letters; yet one can detect no similarity of form in *a*, *b* and *m*, which are shades of brown; or in *d*, *k*, and *p*, which assume the various shades of blue.¹

¹There is, however, such similarity between *b*, *f*, *h* or between *m* and *w* (brown); and between *g*, *p*, *q* (blue).

Miss D. has a use for her colored hearing. She says that the practice of associating colors with letters aids her greatly in correct spelling and in committing words to memory.

MARY R. EASTMAN.

CASE E.

The subject is eleven years old and has had colored hearing ever since she can remember. All the letters of the alphabet, the names of days of the week and of months of the year, numbers and many Christian names, but no common names, are colored. The letters, either separately or occurring in words, are not themselves colored, and the image of the color is vague in form. Both sound and sight, but the sound more clearly, suggest color.

The list of letters with their colors is this:—

a, black.	p, red.
e, grayish-white.	q, gray.
i, gray.	r, reddish-brown.
o, white (more of gray).	s, bluish-black.
u, gray.	t, brown.
b, blue.	v, gray.
c, black.	w, reddish.
d, blue (a little different from b).	x, black.
f, dark red or black,	y, brown.
g, grayish-black.	z, black.
h, blue.	
j, bluish-black (more black).	
k, red.	
l, fast black.	
m, a blue-and-red.	
n, a blue-and-red.	

The colors of names of days are:—

Sunday, black.	Thursday, whitish-gray.
Monday, reddish-brown.	Friday, blue.
Tuesday, blue.	Saturday, whitish-gray.
Wednesday, whitish-gray.	

The month-colors are:—

January, grayish-white.	July, black.
February, reddish-brown.	August, grayish-white.
March, black.	September, reddish-brown.
April, dark brown.	October, dark blue.
May, pink.	November, dull brown.
June, pinkish.	December, blackish.

The colors with numbers are:—

0, grayish.	12, gray-white.
1, gray.	13, dark-blue.
2, brown.	14, yellowish.
3, very dark blue.	15, reddish-brown.
4, light.	16, black.
5, reddish-brown.	Etc.
6, black.	21, brown and gray (with colors distinct).
7, brownish.	Etc.
8, blue.	30, dark blue (but lighter than 3).
9, black.	Etc.
10, reddish-brown.	
11, gray-white.	

It will be observed that 0 by itself is gray, but, occurring with the other numbers, unites with the color of the accompanying number, making it lighter.

My subject paints well in water-colors, and is a fairly good visualizer. I have tried her several times, unexpectedly always, and she has invariably given the same color for the same sound, though the colors are often difficult to describe. They are frequently modified shades or a mixture of several colors. Indeed, in almost all cases of colored-hearing, it seems to be impossible for the subject to indicate the exact shade which a given sound brings to her mind. The color is, for instance, reddish-brown or grayish white more often than it is clear red, brown, gray or white. If the colors, as she describes them, are put upon paper, they never quite satisfy her.

My subject can not account for the phenomena of colored-hearing in her own case. She says that she "feels queer" if the colors do not come as soon as she hears the words corresponding with them. I can not myself determine any rule which governs her color-associations. The initial letter does not often color the whole word: Wednesday is not the color of *W*, nor Oscar of *O*. Neither do the vowels give coloring to the word, and the words do not seem to be the result of the mixing of the various colors of its component letters. But rhyming words, for instance, Harry and Carrie, frequently, though not not always, suggest the same color, indicating again that the color is directly connected with the sound.

BLANCHE L. CLAY.

NUMBER-FORMS.

CASE F.

(The illustration which accompanies this description¹ is from a stereoscopic photograph of a twelve-foot wire, bent by the subject into the characteristic form. The various rests and cords which complicate the picture were necessary to hold the wire in place. The form is represented by the heavy line. The accompanying description is written, as appears, by the subject herself.)

I have had my number-form since early childhood. I can not remember when it began, neither can I remember when and how I learned to count. I have a dim recollection of being set to learn the addition table and of making use of the form, which was even then in existence. It occupies a subordinate place in consciousness, and, though always present when the subject of thought has to do with figures, it may not be distinctly imaged. For instance, I always make use of my number-form in solving a problem, because it helps me, but my mind is closely occupied with the problem and is only dimly conscious of the form.

The numbers, which run in a general north and south direction, are not all in the same plane, and my position with respect to them frequently changes. I usually seem to stand just outside the line of numbers, and *near, but never on* the number most prominent in my mind at the time. I feel much more at home among the numbers about 20 than in any other place on the form. Generally speaking, the plane of the number rises from 1 upwards, but there are many small ups and downs in the line. From 1 to 5 the course is downward; at 6 comes a sharp and upward turn; 8 is lower than 6 and 7 and is in a corner. From 8 to 12 the course is upward, with a bend at 10. At 12 comes another sharp turn; from 12 to 19 the line descends, making a sudden descent at 16, and a steep ascent at 19.

¹ Fig. 1, Plate II.

The line bends slightly at every number between 15 and 19; 18 is sunk down in a corner, a little like 8. 20 is higher than 19, and at 20 comes another bend. 21 is on a level with 20. The numbers 21-29, 31-39, 41-49, etc., follow the same order as those from 1 to 9. 30 is higher than 20, and may be seen from the latter number, since the intervening numbers are in a lower plane. 40 is lower than 30, and is at its right. 50 is higher than 40, and 60 is higher than 50, but lower than 30, which is the highest number in the line. Both 50 and 60 are to the right of 30. At 60 there is a turn to the left. 70 is lower than 60, and 80 is lower than 70. At 80 there is a southward bend. 90 is as high as 60, and is situated in a bend in the line. 100, which occurs in another bend, stands east of 90, and is almost as high as 30.

Outside the form on all sides is darkness; the line itself grows dusky at 70, and beyond 100 there is total darkness, except when that part of the line is directly fixated. The numbers between 100 and 200 run in the same order as those between 1 and 100. This is true also of the numbers between 200 and 300, 300 and 400, etc. The numbers 100, 200, etc., up to 1000, that is, the even hundreds, follow the same order as the numbers between 1 and 10. The same is true of the even thousands. 1,200 and 12,000, 1,500 and 15,000, are like 12 and 15 respectively. The numbers between 1,000 and 2,000 follow the same order as the numbers between 1 and 1,000, etc. Beyond the thousands the form grows dim and disappears. From 1 to 10, and from 20 upward, the numbers seem more or less in shadow, when not distinctly imagined, but between 10 and 20 there always seems to be a bright light. These latter numbers occupy a larger place than any other system of tens in the line, although the numbers between 1 and 10 are rather spread out. The 2's in the 20's and the 3's in the 30's, etc., help to fill up space and make the numbers seem more crowded together. In still higher numbers the hundreds and thousands take the attention to some degree from the figures in the units' and tens' places; thus in 178, I think of the 100 as much as of the 78. The 100 does not occupy the mind enough to get placed in any form, but it prevents my giving 78 its place in the line as quickly and as vividly as I should if it stood by itself, without the 100.

From one number in the form I can often see others at a distance. From 1 I can dimly see 10, and from 10 I can plainly see 20, 16, and a few others in the vicinity of 15; 13 is partially hidden from 10 by 12. From 12, which stands almost as high as 30, I can indistinctly see the latter number and 40, though many of the intervening numbers are hidden from view. From 30 I can look across to 90 and 100, and even beyond.

Each number in the 'teens seems to occupy a comparatively large place in the form, which curves in passing from one number to the next. This is partially true of the numbers between 1 and 10. The order in the 'teens is unlike that in any other part of the form, except when the 'teens recur, as in 113, 213, etc. All the numbers seem to be printed, and lying down on a dim background.

I associate character and sometimes sex, generally female, with numbers. 1, 2, 4, 7 and 8 are reliable, quiet, well-disposed, but not brilliant numbers. 3 is a sharp, shrewd, noisy and disagreeable number, always making as much trouble as possible. 5 is sprightly and merry, happy, and a number to be petted. 9 is dignified, though a little like 3. 10 is well-disposed and dignified. 11 is rather disagreeable, but not troublesome. 12 is a dignified, protecting number, capable of ruling all the lower numbers, even 3, and always treated with respect by the larger numbers. For 13 I

always have a great antipathy. It has all the disagreeable qualities of 3 added to a pertness and aggressiveness which make it repugnant to all the other numbers, with which it seems never to associate. I never wanted to be 13 years old. 14 is like 4. 15, although like 5, always seems strange, irregular, and out of place in the system. I frequently forget it in counting. I feel as if I had to go out of my way to bring it into the form at all. It seems entirely unmanageable. I always feel a great respect for 16. All these numbers are dignified and well-disposed, not brilliant. 18, however, is more important and occupies a larger space than 20.

The numbers in historical dates I think of in a way different from that in which I think of those in the ordinary number-form. The numbers which represent the century in which an event occurs are quite prominent in early dates, *e. g.*, in the date 1020, I think scarcely at all of the 20, but the 10 seems to occupy the place occupied by 10 in the ordinary number-form; I do not think of it as 1000, or even as 10,00, but simply as 10. If I think of the date sometime, or in connection with other dates in the same century, my attention becomes fixed on the last two numbers, which take their ordinary places. The nearer the date approaches the present, the more I think of the last two numbers. The numbers in centuries previous to ours seem to occupy a smaller space than the corresponding numbers in our own century. 1867 seems comparatively near. 1767 does not occupy a space analogous to 1867, but seems to occupy one analogous to 1857, etc. I never think of historical dates in connection with 1000. It is never 1,867, but 18,67.

BLANCHE L. CLAY.

CASE G.

The bent wire is as good a material representation as I can give of the fact that successive numbers from 1 upward to 100 have a space relation to each other, such that if I consider the succession as a whole, I am conscious of mentally glancing along an even but more or less abruptly turning path, tending upwards at about 45°, but growing steeper among the upper numbers. In this glance over the whole series I locate myself more or less definitely in two positions: at a point about half way between 0 and the point on the base directly beneath the 30, for the early numbers, but for those above 25, at a point in the vicinity of 20 (a little in front of the place for 20, as seen in the cut); nevertheless, I reserve the right, as it were, to take other positions, for I find that I often consider limited portions, *e. g.*, 70-80, from a nearer point of view. From 50 upwards the form is not as definite as below, and between 50 and 75 it is not as definite as from 75 to 100. In counting beyond 100 a mental tally is kept of the hundreds, and the fractions are repeated along the form; the "mental tally of the hundreds" is quite closely associated with the printed figures 200, 300, and so on for higher numbers.

Multiples of 10 are naturally the most prominent positions along the form, and in a rough way the straight lengths between the bends include ten units, though at 30 there is hardly a perceptible turn, and the exact turning points are not at 10, 20, etc., but at 12, between 18 and 20, and between 40 and 42, thus suggesting an association with multiples of 6. Above 50, though not as definite, the turning points are at 60, 70, etc. The length also of the upper decades, as if foreshortened and distant, are less than of the lower.

¹ Fig. 2, Plate II., from a stereoscopic photograph.

[Owing to the position of the form relative to the camera, the bend at 19 does not appear as distinct as it is. The line from 20 to 40 is in a vertical plane nearly parallel to the vertical plane through the line 0 to 12.]

I can not explain the form from any associations of drawings, pictures, things or incidents. It may, however, have resulted unconsciously from many such early associations.

While the form gives position to numbers, it does not have much to do with processes of treating numbers, except, perhaps, for adding, in which operation I follow the increasing sum along the form. 4×5 , however, does not mean that I shall take four lengths of five units each and measuring them off on the form, reach 20. 4×5 , 3×10 , etc., are mental relations whose equivalents, 20, 30, etc., are located on the form. Moreover, in written work with figures very little reference is made to the form.

Other relations have forms in my mind: as dates, not at all connected with the number form, months of the year, days of the week; and as a rule my thoughts have a background of the mental pictures of places, things and people with which they are concerned. Dates, *i. e.*, the years, seem to slope downward away from me if they are past, and upward if they are future. The months of the year form a closed cycle, in shape a quadrilateral, its corners between December and January, the middle or last of March, the end of June, and the middle of September. Undoubtedly this is connected with school terms and recesses as well as with the seasons. Days of the week succeed each other in a straight open series.

My use of such forms in thought seems not to be related with any special trait of character, for I do not draw or paint, am not extremely methodical, and do not have more than an ordinary memory for the forms of things; yet my taste is toward applied rather than pure mathematics, and I find that I tend to give a geometric interpretation to a mathematical expression.

This habit or trait of using space-forms for thought is sometimes helpful in getting conceptions and in remembering, often it is a hindrance.

ARTHUR E. KENDRICK.

PLATE I.

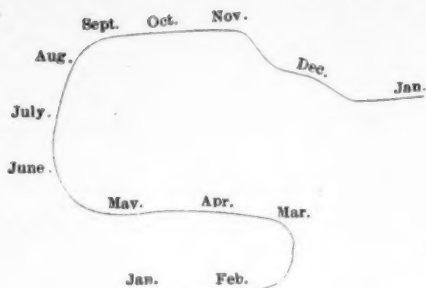
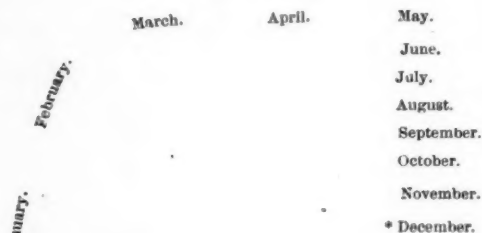


FIG. 1.



*A spring is imagined, which draws December back to the January position, for a fresh start.

FIG. 2.



† The line between M and N represents a fence between them.

FIG. 3.

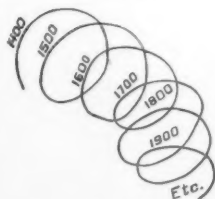


FIG. 4.

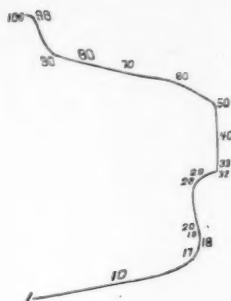


FIG. 5.

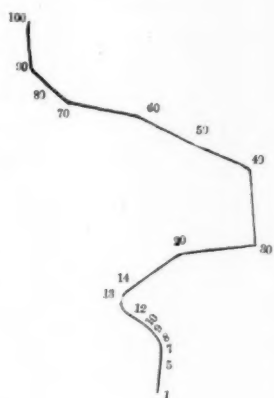
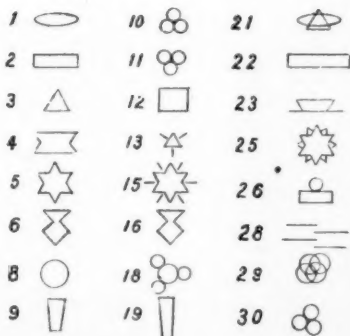


FIG. 6.



29 is sometimes associated with other combinations of circles.

FIG. 7.

PLATE II.

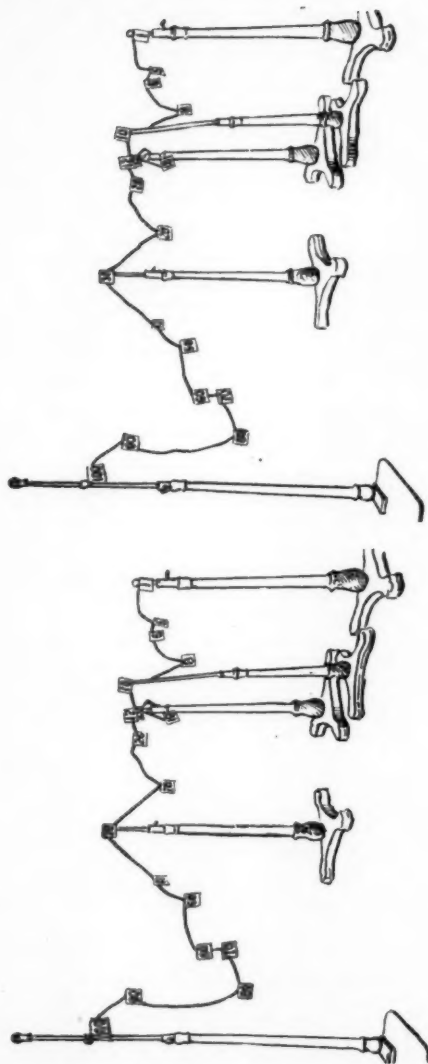


FIG. 1.

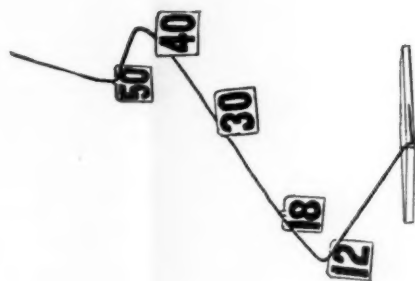
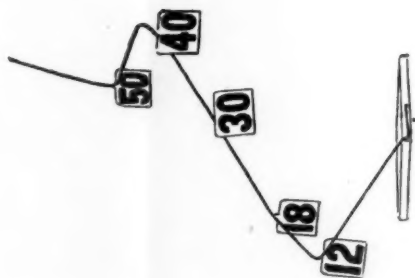


FIG. 2.



EJECTIVE PHILOSOPHY.

By THOS. P. BAILEY, Jr., Fellow at Clark University.

Empiricism and intuitionism have always been foes: the one abhors "subjectivity" without a history, the other despises uncritical "mechanism." Yet both these philosophic attitudes (for schools they are not) claim to rely on experience; and their claims are just. Both admit that there are sensations and relations between sensations. The mechanically minded see in sensations the *real* mind-stuff, and defiantly ask, what would become of your relations, your intuitions, if their terms were taken away? You acknowledge that you *feel* intuitions, but are not those feelings the practical results (for life and conduct) of the workings of the psychical mechanism? Even admitting that feeling is primary, how could you have *cognitive* intuitions if you did not have language, which is a sensational symbolism at bottom? It is anthropomorphism that makes you feel that a cause *produces* an effect. To be a logical believer in causation, you must see powers working in all natural successions. But the intuitionist replies: Principles are the important things in life and mind, and sensations are but the handles whereby we may catch hold of intuitions. The genesis and the dressing of an idea determine nothing as to its validity. The practical results are ends, and the psychological mechanism is a means. Language necessarily has a sensational dress, for it appeals to the ear and the eye. But how about gesture and facial expression and the inherent grammatical categories which are the substance of which language is the shadow! You may slur the "ifs" and "buts" and "therefores," but you cannot *think* without them. You cannot explain away cause, because you cannot transcend your experience. You cannot annihilate reason without annihilating your cock-sure empiricism. Why has not the foolish belief in causation been annihilated by "natural selection?" You had better not talk about anthropomorphism while the sword of the idealist is bared. And so they have cried "come again!" at each other through the rolling centuries. I give merely samples of the fence-play. But Berkeley, the idealist, was a man of faith, and Herbart, the empiricist, fought utilitarianism as keenly as to stab at its masked face in the categorical Kant! How humanly precious is inconsistency in philosophy! These naïve contradictions between theory and practice, logic and instinct, have for some time been foreshadowing the larger view of a biological and anthropological philosophy. Many of the old issues are dead or dying. The empiricists are learning some lessons: However "derived," relations are now instinctive and are the most valuable of mental things; language had cognitive implications from the start, and its growth has been in a cognitive direction, however much the sensational "terms" may vary; let us hold to a chastened anthropomorphism lest the idealist and the materialist destroy us—we can think of matter only in terms of mind, and of mind only in terms of matter (Spencer); perhaps we had better ease up a little on the "prin-

ciple of relativity"—the biologically-minded have given us the better principle of fatigue, the discovery of hot and cold spots, the phenomena of monoideistic trance, etc.; the probability that there are pleasure and pain-fibers render the "theory of relativity" too metaphysical, and empiricists must beware of metaphysics, at least old metaphysics. The intuitionists have also learned some lessons: Relations are not degraded by having pedigrees; empiricists are often neither fools nor knaves; physiology and biology are magnificent allies; perhaps it is better not to dogmatize too much about the origin of languages, especially as we know so little about non-Aryan tongues, the North American Indian language *Stocks*, for instance; the empiricist is unable to do any harm in his efforts to disprove causation; let us allow him to jump out of his own skin if he wants to; on the other hand, let us beware of entangling alliances with the idealist, who insists that his skin is not spacial in *essentia*, for the true intuitionist cannot afford to part with common sense; perhaps foolish beliefs may be inherited because they are useful—perhaps we need a *critique of pure instinct*. We even begin to find a few intuitionists that study Herbert Spencer *sympathetically*, and an occasional empiricist that has patience with the Scottish school of philosophy. But the old issue is still before us—sight *versus* faith, sensation *versus* intuition. The trend of the best equipped and most earnest minds of today is, I think, toward instinct as the starting point, and the criterion of philosophical activity. Then have the intuitionists won? The criterion, but not the method. The empiricists have lacked faith in instinct, but they have had faith in sight. Now the method of science is to express relations in terms of quantitative sensations. Impossible as it is to weigh and measure faith, hope and charity, it is possible to objectivize, to sensationalize, or at least to symbolize in terms of the biological sciences our psychological and philosophical knowledge. Shall not philosophy express her faith in terms of sight?

As is the psychology, so is the philosophy. Philosophy is the science of the sciences; it is the unifying, or, better still, integrating science. Psychology (in the widest sense) is the mental science corresponding to the physical sciences. Whatever else the terms of philosophy may denote, they certainly *must* represent facts of normal experience. Logical puzzles and word-mongering are not philosophy. The time for seeking *noumena* has passed, for phenomena are noumena, but there are phenomena and phenomena. Thinkers discriminate the relative and the absolute in experience: and psychology is the science of experience. But what sort of psychology? That which accepts *all* the facts of experience, does not try to explain away any class of facts, does not accuse the human race of ineradicable illusion, has no metaphysical (materialistic or traditional) theory to sustain; but which uses mechanical hypotheses wherever it can, does not worry itself about whether brain explains mind, or whether mind explains brain, interprets the results of trained and of untrained introspection, by means of objective symbols and analyses, expresses the laws of mental operations in terms of mechanism, and the validity of mental relations in terms of spontaneity. Such a psychology finds itself at home in brain-psychology and in abstract ethics, without confounding the sciences or dividing nature. Spiritualists and materialists, idealists and realists, pantheists and theists must all appeal to it, or be condemned to the nebulousness of an unscientific metaphysic. Philosophy must have a valid psychological starting point, a psychological standard and a psychological criterion. Shall we start with "sensation," or "intuition," or "feeling"(!), or "volition?" In my opinion, the

starting point is muscular strain; the standard is impulse; the criterion is catholic human instinct, but I must try to justify this opinion.

It seems almost like sacrilege to question the tripartite or trilogical division of mind into "intellect, feeling and will." Without attacking the time-honored division, let us adopt another for the sake of convenience. Mental facts are of two kinds: the ejective and the effective. The ejective includes sensation and relation (intuition); effective includes impulse and emotion. Sensation is of two kinds: affective (pleasure and pain), and objective (the "six senses"). Relation is of three kinds: automatic, as time, space, number, etc. (the *concepts* of time, space, etc., are not here referred to); reflex = biological, psychical, social = *animal* (including *homo sapiens*) instincts relation; intuitive = *aesthetical*, logical, ethical = human instinct relation. Turning now to the effective, impulse is muscular feeling with a trend toward outwardness (away from diffused subjectivity), activity in a definite direction, integration for an end. Emotion is muscular feeling with a trend toward inwardness (away from definite objectivity), reaction in a (mentally) indefinite direction, segregation for recuperation. Now, how is muscular feeling the starting point of philosophy?

Movement is the end of mind as motion is the end of matter. Matter is a "permanent possibility," not of "sensation," but of motion. Mind is a "permanent possibility," not of "having sensation," but of movement (muscular feeling). In the reflex are the sense-organ and the nerve-centre exist for the muscular contraction. In character, knowing and "feeling" exist for doing and the capacity for doing. Muscular feeling underlies attention, resolution, determination, spontaneity; benevolence, justice, equity; infinity, eternity, absoluteness; force, power, might; personality, institutions, history. Our minds are "active" or "passive;" we "form" opinions and "diffuse" knowledge; blind deaf-mutes get along nicely with but a single *representative* sense. In the lower animals, sensations are but guides to muscularity. In us, sensations and cognitions and pleasures and pains mean nothing to us if we are debarred from bodily and mental activity and rest. Matter is symbolized force; force is objective energy (muscularity), however much you de-anthropomorphize yourself, until you call it P and put it in a formula. We cannot get rid of foot pounds and horse powers either in physics or psychology. Physics has adopted units of force, has psychology adopted units of energy? The reflex arc! Yes, and the muscular end of it. There is but one valid psychophysical fact, the contraction of a muscle with the feeling of muscular strain. In this phenomenon, energy is force, force is energy. The power (not noumenon) "behind phenomena" is *at least* energy-force. What are beauty and truth and right apart from *attraction*? Says Prof. Lloyd Morgan very truly and very nobly, "Knowledge and art are justified by their influence on conduct; truth and beauty must ever guide us toward right living, and aesthetics is true or false according as it leads toward a higher or lower standard of moral life."¹ Wherever our ideals may lead us, they *lead* us, and we *follow*.

Muscular feeling is (1) immediate, (2) objectively based in muscular contraction, (3) combines diffusion with localization, (4) makes subjective and objective integration (in consciousness) possible, (5) is the origin of the objectively projected idea of Force (the Force-schema), of the subjectively injected idea of Energy,

¹ *Springs of Conduct*, p. 263.

Might (the Energy-schema), of the ejective idea of Power (the Personality schema); (6) it is neuro-muscular—it is involved in and necessary to (a) sensation (localization, intensity, local signs), (b) impulse (outgoing energy), (c) emotion (interacting energy), (d) feeling (pleasure, pain, reaction, satisfaction), (e) relation (subject-object attitude). Yet (for one can dogmatize about opinions), let him be anathema who "evolves" sensation, relation, impulse and emotion "out of" muscular feeling. An "emotion" may be a mental attitude involving all "elements." I choose to limit the term to effective, reactive, reflex muscular. Muscular feeling ought to be the starting point of psychology and philosophy, because it is the raw stuff of activity throughout the mental sphere, and makes possible an appreciation of the outer world of force. Activity must be guided, and its guidance is all important, but we *start* with the activity itself.

Impulse is the psychological and philosophical standard. Having decided to start with the effective side of the mental life, we shall find ourselves called on to choose a standard of mental currency. Relations may control the flow of our mental money, may adjust supply to demand, may determine amount of reserve fund and kind of investment, but there must be coin of the realm in plenty, and into which mental paper is easily convertible. Shall we choose as the standard, impulse or emotion? Unquestionably impulse. It most nearly represents irritability; it is the effective side of primary instincts; it stands for definiteness, coherence, integration; it is the basis of will and of work. We have needs ("striving impulses"), our active impulses satisfy those needs of objects and of exercise. Emotion is reactive and secondary; its primary function seems to be the reflex overcoming of the inhibition of normal activity. Apart from instinctive outbreaks, emotion in man seems to be acquiring a segregating, recuperative function, and to be more and more characteristic of play as opposed to work. (What we value in an emotion is the intuition, the relation, in it.) Its pathologic tendencies are many and various; emotional characters never become integrated. You can play upon them as on the strings of a harp. Emotions are represented and accompanied in the ejective sphere by pleasure and pain, and are guided by the self-relations. When limited to the function of recuperation, and when recuperation *prepares* for the impulse-attitude-work, emotions are necessary because play is. But impulse is the gold standard of our mental mechanism of exchange. Our wealth is in the unconscious, is organic, and it is our business to invest it productively. Philosophy ought to regard as its normal individuals only those who maintain a sufficient gold reserve fund of spontaneous impulse. Let us have the motor outcomes of innumerable reflex arcs stored up in us as potential energy, to be converted into kinetic volition on the warrants of those controllers of the currency, the relations of right, truth and beauty, as countersigned by the treasurer, our religious ideal. Our play ought to prepare us for work; emotion ought to sustain impulse. We must beware lest our emotional silver become depreciated so that there will be need of a cart-load of sentimentality to equal a gill of kindness.

Pleasure symbolizes attraction, and pain repulsion; objective sensations symbolize activity and the absence of these leads to quiescence. Now sensation (pleasure, pain and six senses) may run a psychological mechanism, but not even in the lower animals do they so. The instinctive impulses and emotions of many animals are full of implicit relation, biological, psychical, social. The empiricists have always made a mistake in stressing pleasure and pain as

"motives to action." Affective sensations diffuse, but in themselves have no effectiveness, no more than objective sensations have. The affective consciousness occupies a small share of normal life as compared with the healthy, almost toneless, work-period. If our potential energy is being replaced as fast as it becomes kinetic, we expect the diffused conesthetic emotion to be the result of recreation and therefore to give moderate unobtrusive satisfaction. The great pleasures and the great pains are reflex organic affairs, and will not furnish a basis for philosophy. They are unusual and they have no effectiveness. In extreme cases, the effective sensations paralyze the muscles (become dissociated from effectiveness) and efface consciousness. Nor can philosophy be constructed on the idea that *play* is the goal of life. Play is a preparation for work, for progress, or it has no philosophical meaning. Even the delights of the "aesthetic emotions" are abnormal, harmful, disintegrating, unless they help on that recreation that fits us for work. The rational man would not want to live in a heaven of eternal play. He would ask for the "search for truth," for instance, not to have truth come gurgling down his mental throat. If philosophy, if ethics, wants a *summum bonum* that every normal person can understand, it would not be the "greatest happiness of the greatest number," nor "self-realization," nor "action consonant with law universal," but all of these and more—the most adaptive and expressive work and play that make for the kingdom of heaven. I do not intend to develop this formula, but content myself with adding another ejective (self-objective) maxim: Work for thy living and live for thy work.

The criterion of philosophy is catholic human instinct. When Socrates and his friends had finished their discourses without being able to definitely set forth the essence of courage and wisdom and virtue, he used to say, nevertheless, let us practice them; after Descartes had proved animal automatism satisfactorily to himself, respect for man's relational instincts made him rescue human beings from blank mechanism; when Kant had finished his wonderful feats in the realm of pure reason, he came back to faith and instinct, and exalted spontaneity into a metaphysical principle. The greatest philosophers have been unable to reduce all being to one substance and all relation to one principle because they respected intuition. Some of them have tried to justify the intuitions of God, spontaneity-immortality, some have contented themselves with simple affirmation, some have confessed the impotency of reason to justify them, but all have held to them. The objective lesser lights have given us mechanism, materialism, agnosticism (because we now only "Know in part?"). The subjective logicians have given us mysticism, idealism, pantheism. The lower grade thinkers have set forth eclectic and mixed systems, varying in eclecticism and guess-work. Ejective philosophy, with its object-subject starting point in muscular feeling, and its outward tending work-standard in impulse, strives to investigate the conditions under which truth, beauty and right originate, to set forth its results in empirical terms borrowed from the *objectively* known (i. e., science), seeks its leading principles in the philosophy of character and religion; it believes that there is a purpose in history and in life, that the deepest intuitions of the human race *cannot* be illusions; it believes that philosophy, having had centuries of sight, will return to its primitive attitude of faith. But the content of that attitude is very different. The second childhood of philosophy is not of innocence, but of grace; born of *need* of guiding instincts. Every virile race has its call to the simplicity of nature. But philosophy wants not the simplicity of the savage, but that of earth's

greatest character heroes. Is metaphysic therefore destroyed? I think not. All the sciences have their metaphysic, and philosophy has all the sciences. Skepticism is ruled out, not criticism; materialism and idealism, not physiological psychology and logic, ethics and æsthetics; agnosticism and pantheism, not rationalism and theism. There must be a "synthetic philosophy," but human instinct must judge its results. Above all, do we want a clearing up not only of the "notions" (indeed, some "notions" need critical distinction and others a bodily form), but of the instincts. Ejective philosophy has an effective starting-point and norm, but its criterion is ejective. Of the ejective relations, the æsthetical are the ones that will dominate philosophy; a critique of the æsthetical in nature, in character, in the conceptions of God, immortality and the soul, will, I believe, be a main work of the philosophy of the future. Redintegration, integration, disintegration, habit, law, correspondence with environment, development, character, monism, ideal, type, holiness, fitness, symmetry, harmony—these and many more of like nature are the ideas of the philosophy "that is in the air." Anthropomorphism is becoming æsthetical. As might be expected, theology shows this tendency most plainly: no longer the *Moral Governor*, or the *Righteous Sovereign*, or the *Unknowable Power*; but the Father, who knows and cares about the sparrow's fall, though it must fall; whose sons we are. Religion has ceased to ponder *how* the Father knows or why He cares; it is becoming more and more biological, and, therefore, its ethical life more spontaneous and æsthetical. Men prize spontaneity, but are beginning to say, let the contingent *become* the necessary, let the necessary *be* the spontaneous, and the will on earth correspond to the holiness, the completeness of working of the will in heaven. Absolute right is absolute utility; that all may be will-holy, complete, not that we may be happy, though we will be if we fit in with things eternal. Let *cogito, ergo sum* be *fido ergo fui, spero ergo fero, amo ergo sum*.

Let us, therefore, say that ejective philosophy will exalt æsthetical anthropomorphism, and that it will be biological, instinctive, historical and biblical. Biological: Notice the tremendous sweep of these terms (for natural "analyses" are the parables of philosophy)—cell, differentiation, degeneration, environment, survival of the fittest, heredity, conformity to type, etc. Instinctive: Critique of instinct. Duty becomes privilege; "the law" becomes "grace" (the instinct of holiness). Historical: Genesis and history of relations. A certain environment is necessary for their *manifestation*. A high brain is a necessary environment for a high character. High brain is a new representation of force just as a high character is a new representation of energy. In character development, integration (kinæsthesia of work and conæsthesia of character, both relational, conceptual), self becomes objectified (an apperceptive eject), a power working for an end set for it. Biblical: Biological, instinctive, historical. Ye work (*final aim*) neither for happiness nor for right, truth and beauty, "but seek ye *first* (primary attitude) *his kingdom*, and *his righteousness*; and all these things shall be added unto you (Christ had just before spoken of the lilies of the field).

At the risk of being tiresome and of repeating, let me sum up the whole matter as it appears to me at this moment. "Prove all things; but hold first to that which is good" (Paul the Apostle: I Thess. v. 21, R. V., marginal reading). Let us see if we have not caught hold of some of the most vital things of faith in the wrong way. Let us not "reconcile" by concessions, by eclecticism, but let us

have a critique of pure relational human instinct, our ideal being the perfect one, who called himself *THE Son of Man*. Let us work, build up, find new philosophical relations, ask for "copy" of science and art and life. Let us have all-sided, energy-based, relation-guided anthropomorphism. Let us take hold of intuitionist instinct by an empiricist handle. We side with both intuitionist and empiricist in having philosophy ejective and not effective. Effective philosophy runs into materialism, or into mysticism, or into both, with all grades of abnormality between. Philosophy is representative, and, therefore, it is ejective. Man is not objective (matter) nor subjective (self-feeling), but ejective, self-objective, apperceptive, actively personal, an agent and a steward.

Atheism, agnosticism, pantheism, and the rest of them, are simply tiresome, unæsthetic. They fail to help us to work, they fail to explain things because things cannot be explained either objectively or subjectively, but only ejectively, anthropomorphically, in the higher æsthetic sense of the word. Things are explained when they all fit in together with our purest faith and our best work.

If I succeed in suggesting "what is in the (philosophic) air," I shall be satisfied.

15 East Senate Street.

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THE PSYCHOLOGICAL BASIS OF HEGELISM.

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I have already published in the *American Journal of Psychology*¹ what may be considered two contributions towards a new phase of psychological science, viz., the Psychology of Philosophy. As far as I am aware the method of treatment of philosophical systems used in these articles is almost entirely new. It aims at giving the psychological basis of the most fundamental principles of the various systems, and substituting for the mysticisms of the old philosophy more accurate categories obtained by scientific experiment. My first paper offers an examination of the philosophical systems of Hobbes, Locke, Berkeley and Hume from the standpoint of Visualization; in which I attempted to show that many of the chief characteristics and short-comings of these systems have their fundamental basis in the psychological process of Visualization. In the other I have endeavored to point out an important group of conceptions, especially those of Natural Realism, which have their psychological history in the sense of touch. Now I propose to offer a third contribution of the same nature, in which I shall endeavor to trace the influence of the discovery of galvanism in determining the great system of philosophy presented by Hegel.

In the development of the sciences there is perhaps no factor more potent than the psychological process of apperception. The development of the sciences undoubtedly does not take place according to any eternally fixed order, but rather through mutual influences, which are in many cases to a great extent accidental. The various sciences are necessarily interdependent; and out of this direct interdependence which gives rise to reciprocal action between them, there arises an opportunity for the constant activity of a great and powerful influence in determining their development, namely, that process which, since the time of Herbart, is known in psychology by the name of "apperception." The conception gained through the experience of an interesting fact in one department of science serves as an "apperceiving type" for the cognition of newly presented phenomena in other departments. Thus the law of gravitation once observed in a particular phenomenon soon appeared as the fundamental type of all physical action. Everything having the appearance of natural motion or force began to look like one more illustration of the law of gravitation. The discovery of the polarization of light was followed by the apperception of the polarization of heat. The refrangibility observed in light and heat led to the hypothesis of the refrangibility of sound. The theory that evaporation is a solution of water in air was an unconscious assumption that water and air stand to each other in a relation similar to that between salt and water. The theory of the atomic repulsion of the particles of the evaporating fluid, as an ex-

¹ Vol. IV, Nos. 2 and 3.

planation of the diffusion noticed in evaporation, originated by reading into this phenomenon conceptions gained from the observation of electric repulsion. Of such apperceptive knowledge the whole intricate web of scientific theory is full. And this is the particular psychological agency which we must keep constantly in view in tracing the influence of the discovery of galvanism on the mass of scientific and philosophic speculation which led to the production of the Hegelian system.

The phenomenon of attractive and repulsive agency observed in magnetism has long served as a type of scientific and philosophic apperception, and among the ancients as well as among the moderns has often formed the basis of the wildest and most extravagant mysticisms. In the earliest stages of physical and astronomical science all cosmical interactions, all actions between bodies at a distance, could be made intelligible only when classed under the general type of magnetic attraction or repulsion. Everything novel or strange in the shape of attractive or repulsive force, in any department of experience, naturally tended to be apperceived by the mystic mass of ideas gained from observation of magnetic action. So Gilbert tells us, in his "De Magnete," that "the magnet and amber were called in aid by philosophers as illustrations, when our sense is in the dark in abstruse inquiries, and when our reason can go no further." In these earlier times, however, the phenomenon of magnetism stood apart from the great body of intelligible experience as an isolated fact, strange and mysterious in its nature. All facts and all systems of facts, accordingly, apperceived under this type, were on their very face mysticisms of the most mystical calibre. Very different is it, indeed, in the case of that period of discovery and speculation with which we have to deal in tracing that development towards a scientific consensus which followed upon the famous discoveries of Galvani and Volta. In this period magnetic or electric agency still characterizes the "apperceiving mass" dominant in the speculation, but it is no longer an isolated fact: it is now scientific—closely interwoven into, and widely spread throughout, the whole net of scientific experience. In this period we find the electric category of "polarity" presenting itself as the fundamental principle in all the sciences; weaving itself rapidly, through the instrumentality of enthusiastic experimentation, into the basal network of Physics, Chemistry, Mineralogy, Morphology, Anatomy, Physiology, the medical sciences, the social sciences, and various departments in the great body of facts which pertain to general experience. In this period, in short, we find the principle of electricity as it was observed in galvanism accepted as the most satisfactory explanation possible of the fundamental facts of nearly all departments of knowledge; many facts, indeed, which in the light of modern science are as far from finding their explanation in this way as the east is from the west. In this period, consequently, facts apperceived under the type of magnetic or electric agency savored not the least of mysticism, but appeared truly scientific in their inmost fibre.

This difference between electric agency as an apperceptive type among the ancients and as an apperceptive type in the scientific period following the discovery of galvanism, illustrates a very important law of apperception. The one all-important thing which determines to what extent any observed phenomenon shall serve as an apperceiving "mass" for other phenomena is the *interest* which it excites. To the ancients the phenomenon of magnetism was not of universal interest. In fact it was of no *real* interest; it was rather a matter of curiosity. The discovery of galvanism, how-

ever, seemed to carry within it a source of interest most real and intense—an interest that bordered on the wildest excitement. And now it becomes our investigation to inquire into this source of interest. Why all this enthusiasm following the discovery of galvanism? Why should electricity suddenly take such a freak and violently force itself into so many departments of knowledge into which modern science says it had no right to go? What was there about the nature of galvanism that it should excite so much interest?

The great excitement which Galvani's experiments caused all over Europe was due principally to a circumstance in connection with his first discovery, which was purely accidental and unessential to the true value of the science. This circumstance was the intimate connection of the experiments with the animal organism and the phenomena of life. In its first announcement Galvani's discovery was given forth as a manifestation of electricity under a new and remarkable character, namely, as residing in the muscles of animals. The limbs of a dissected frog when touched with two heterogeneous metals were observed to repeat almost all the motions of life. This fact once observed, the first psychological tendency was to secretly suspect—and with great enthusiasm too—the probability that life was identical with electricity. And this once suspected, what could be more attractive than a headlong rush into the investigation of electricity or galvanism? Experiments performed on executed criminals met with such wonderful results that men began to hope that ere long the dead could be raised. Life apparently revived! A thorough knowledge of galvanism will give command over all the forces of life! Inspired by such phantom hopes men waxed enthusiastic and were carried off their feet. A new sun appeared on the scientific horizon in the intoxicated minds of its worshippers. A new sun-myth began to crystallize; a great scientific mythology began to dawn. Introduced in such a spirit of enthusiasm, Galvani's experiments were repeated, with various modifications, in all parts of Europe, exciting the greatest curiosity and giving rise to the most extravagant speculations. The study of galvanism soon became of paramount interest, not only to those actively engaged in scientific investigations, but even to many who were not. Valuable prizes were founded on all sides expressly for promoting its prosecution. Scientific institutions and societies, as well as individual scientists, made it their problem of special research. Commissions from various institutions and societies throughout Europe were appointed to investigate the wonderful results obtained by Galvani and Volta. Not narrow or restricted in its scope, but flashing its magic light into all recesses of scientific research, representatives of all departments of knowledge, Physics, Chemistry, Physiology, Medicine, Biology, Psychology, etc., were found busily engaged in experiment, with a view to its application in their particular subjects of investigation.

The importance of galvanism in the history of science is indeed not less than it was estimated by the great band of enthusiasts who devoted themselves to the speculations to which it gave rise in the first stages of its history; but its permanent scientific value is of a character altogether different from that which suggested itself to their minds. In every great scientific discovery two kinds of value can always be observed. First there is its value as estimated by those who care for it in its childhood—a value which generally passes off into a mass of speculation, and is interesting afterwards only to the psychologist. Secondly, there is its true scientific value into which it finally settles down—a value which remains per-

manent throughout all further development of the science. The real scientific value of the discovery of galvanism consists in none of the speculations to which it at any time gave rise, but in the practical means and many advantages which it ultimately afforded for the observation of a larger number of facts in various departments of science. But in this permanent scientific value we are here not interested; our interest is in its other value—the mystic value attached to it in its infancy. Our interest centres in that apperceptive type of speculation which hovered about all the earlier experiments,—a type of speculation which is well illustrated by a story told of Napoleon Bonaparte just after he had called Volta to Paris. After seeing the decomposition of salts by the voltaic pile, he turned to Corvisart, his physician, and said: "Here, doctor, is the image of life; the vertebral column is the pile, the liver is the negative, the bladder the positive pole."¹ Such speculation as this is deeply interwoven into the inmost fibres of nearly all the thought of scores of the greatest German scientists of the latter part of the eighteenth and the beginning of the nineteenth century.

In its circulation through the various sciences, galvanism had two main avenues of approach. One was the science of chemistry, with which it was essentially connected; the other the science of physiology, with which it was accidentally connected.

In the department of chemistry, the decomposition of binary compounds by the "pile" laid the foundation of the whole so-called "electro-chemical" theory. From the wonderful facts collected by numerous experiments along this line, quite early in the history of galvanism, a great theory of modern science was suspected and maintained, viz., the identity of chemical and electrical energy. The chemical composition of the fluid with the zinc in the voltaic pile, produces, when the current is completed, a current of electric influences in the wire; and this current, if it pass through an electrolyte, manifests itself there as *decomposition*, overcoming the chemical affinity which resists it. The true scientific bearing of this fact was not properly understood until the time of Faraday. What we want to see, however, is in what way it was understood by his predecessors. That these two sets of phenomena, the electrical and the chemical, were identical in principle, was undoubtedly apprehended and maintained. But in what way was the common principle apperceived? We find that the common principle was still the principle of electricity. Instead of electrical and chemical action being both referred to a common energy which manifests its nature in these two different ways, both were referred to electric agency. The whole process, including chemical and electrical action, was apperceived under the type of electric action. Thus the forces at the point of composition and at the point of decomposition were conceived to be the same force; but this force was looked upon as manifesting itself in the mystical polar opposition of the poles of the magnet or the positive and negative in electricity; composition and decomposition were polar opposites. In the recognition of the intimate relation between the two sciences, the chemical aspect of the supposed common agency underwent severe criticism, but the one thing that remained throughout uncriticised was the electrical aspect. Consequently, it served as the apperceiving "mass" for the facts of chemistry. Thus Berzelius, the great Swedish chemist, and a host of German chemists considered that the descriptions in all

¹ Becquerel, *Traité d'Electricité*.

chemical combinations might be "polar." All chemical elements could be considered as electro-positive and electro-negative. All elements were thus classified: Hydrogen, Oxygen, Acid, Alkali, etc. And this "polar opposition" they made the basis of all their chemical doctrines. In the enthusiastic apprehension of this polar relation of the chemical elements, all their phenomenal or sensible qualities were lost to view. The relation of polarity was conceived to constitute the very *essence* of the elements. Hydrogen, for example, was conceived to have its whole being and essence in its polar relation to other elements, just as the north pole of the magnet was conceived to have the essence of its being in its polar opposition to the south. As Oken puts it, "The whole principle or rationale of chemical action consists in the potentiality of two elements to revert to their polar condition." Or, as Hegel puts it, "Objects chemically charged with difference are what they are expressly by that difference alone."

The same tendency of speculation is also exhibited in the science of mineralogy. As the elements of all compounds could be described as polar, that is, could be distinguished as electro-positive and electro-negative, thus giving to every element a place in a series defined by the degree of these relations, the electro-chemical hypothesis seemed to afford a rigorous and complete system of arrangement for the minerals. Accordingly, at one time, we find them arranged according to their electro-positive element, and the elements according to their electro-positive rank; at another time, according to their electro-negative element, and the elements according to their electro-negative rank. Such systems of classification were supported by such men as Berzelius, Gmelin, Bendant and Nordenskiöld; and seemed thoroughly justified by the state of science at the time. Thus in mineralogy, as in chemistry, the tendency of thought which naturally grew out of the exaggerated estimation of the category of "polarity" was to entirely lose sight of the phenomenal or material element. The external properties of minerals, which are the proper object of the study of mineralogy, were made to depend wholly on the electrical relations of their elements. "Such schemes," says Mr. Whewell, in his "History of the Inductive Sciences," "exhibit rather a play of the mere logical faculty, exercising itself on assumed principles, than any attempt at the real interpretation of nature."¹

From the side of physiology, the investigations were even more enthusiastic. As the experiments were carried on by all the most active scientists of Europe, especially by the Humboldts in Germany, the various phenomena of physiology, one by one, began to exhibit themselves as manifestations of electric agency. In the animal organism, the relation between whole and part was conceived to be that of polar opposition—that mystical "difference in unity" which exhibits itself originally in the phenomena of magnetic and electric action. Muscular contraction was explained as the mutual electric repulsion of the fibres which, on account of their being fastened at the extremities, caused the muscle as a whole to contract. Again the underlying principle of all nervous activity was explained on electrical principles. Alexander von Humboldt made laborious and tedious attempts to explain "nerve currents" and "sympathy" between nerves by electrical "conduction." The animal organism was looked upon as an actual voltaic pile. The solid and fluid parts together formed a galvanic circuit, as did the metals and fluid in Volta's pile. Every irritation, sensation and movement was con-

¹ Vol. III. p. 243.

ceived to be a manifestation of this galvanic agency. Thus Prochaska explains sensation: Any irritating body brought into contact with the organism forms a new link in its galvanic circuit of solid and fluid parts, which causes a quantitative and qualitative change in the electrical tension, which is conducted by the nerves to the brain, and this produces sensation. So also "reflex action." Reflexes, he says, are "founded on electrical attraction and repulsion of advantageous or injurious irritations, according as the *polarities* of the organ and the irritation are identical or opposite," etc., etc.

Into the science of morphology, too, the electrical category worked its way. For example, cells were viewed as standing to one another in the relation of polar opposition. Cell-division was an illustration of electricity differentiating itself into the opposite forms of positive and negative. The accumulation of cells into groups again took place on the principle of electric attraction. By some, the whole process of evolution in the animal kingdom was conceived to be nothing more nor less than a galvanic process exhibited in an endless number of variations. Thus we find such theories as: The male corresponds to the positive and the female to the negative pole. The infusorium is a galvanic point, a galvanic vesicle, a galvanic column or chain.¹ Every change in the process of evolution takes place through the differentialization or the absorption of fixed poles. The number of individual organisms is not persistent; they present the aspect of constant change. They are products of a ceaseless *polarization* or a constant evocation of poles in the great galvanism, positions of the general galvanism in time. As the poles change, so also do the organic individuals. The kingdom of organisms is an iron bar in which the magnetic poles originate and vanish or change, according as the polarizing magnet is removed.¹ Organism itself is galvanism. What would be organic must be galvanic; what would be alive must be galvanic. Galvanism lies at the basis of all organic constitution; it is the rationale of organism. All organic processes are either modifications of it or only its combinations with other and still higher processes, etc., etc.

Not only the partial processes of physiology and the historical changes of morphology were doomed to be explained after this fashion; the same kind of explanation was ardently applied to the higher principles of life and thought. The vital principle was galvanism. We have many illustrations of this doctrine in the history of medicine, especially in the theories of that group of physicians commonly designated as the "natural-philosophical school."² John Christian Reil (1759-1813) was probably the first to clearly state the doctrine. According to him, the *vital process* was *galvanism* — a potentialized galvanism. Irritability and sensibility are the two poles. Every organ manifests "polarity." The diaphragm is the indifferent point of the body. "Tension" prevails everywhere between organic and inorganic beings. Death arises from an electric shock by which a neutralization of the "tensions" is accomplished. In this doctrine, he was followed, with more or less variation, by numerous others. Dietrich, G. Rieser (1779-1862), professor at Jena, maintained that "polarity, conceived as a phenomenon, is the basis of everything, since life is understood as an oscillation between a positive and negative pole, and the vital principle as the organic tension which kindles and supports this oscillation." Ignaz Troxler (1790-1866), professor at Berne, conceived the various vital

¹Oken. *Physio-philosophy*.

²See Bass, *History of Medicine*.

processes to stand in polar relation to one another: Excretion, secretion, respiration, digestion, etc. Excretion is secretion directed externally, and secretion is excretion directed internally. Respiration and digestion are identical in their essential tendencies and differ only in their relative direction. Life in its inmost character is individual productivity, in which the producing agent and the product are interwoven under the form of self-determination. This idea of self-determination, in which the producing agent and the product are indivisible, is the idea of self-differentiation as manifested in electricity. A similar view was held by Ph. Franz von Walther (1782-1849), professor of surgery, successively at Landshut, Bonn and Munich. He held the true essence of the organism to be that "it admitted no division of the idea of life." The primordial function of life is "self-production," "to which corresponds, in organic nature, magnetism." The original differentiating principle is apperceived under the type of magnetic differentiation. It differentiates itself into the two poles, irritability and sensibility, the former of which corresponds to electrical and the latter to chemical action. This was also the doctrine of Schelling, and of Hegel, too, though perhaps in a disguised form. Among the pupils of Schelling who were mainly physicians, we find the same doctrine carried out to its extremes. All the phenomena and processes of life, and indeed of all nature, were arranged according to "polarities." Everything in nature was polar: Man, woman, irritability, sensibility, subjectivity, objectivity, electricity, magnetism, oxygen, hydrogen, acid, alkali, etc., etc. Here again we see illustrated the fatal tendency of the "polarity-myth." The whole value of empirical facts of all kinds is lost to view, spiritualized away under the mystical metaphor, and the only real thing left in all nature seems to be the relation of polarity. Among those who supported this exaggerated theoretic type of doctrine were also C. H. Pfaff, Humboldt, J. F. Ritter, Rheinholdt, Prochaska, Brandis, Treviranus, Bischoff and Gropengieser.

In the department of psychology the influence of galvanism is well illustrated in the theory of animal magnetism. A great portion of the literature on hypnotism, even up to the present time, is saturated with the mysticism of this doctrine. At the time which we have now under consideration, we find this theory supported by nearly all the physicians already mentioned; also by A. E. Kessler, Wolfart, Prof. Kluge (a special Berlin authority), Hufeland, Eschenmayer, Kieser, Nasse, Walther, Ennemoser, and others.¹ The phenomenon of somnambulism in the hypnotic state was explained thus: The brain with all its dependent organs of motion was regarded as the positive or conscious pole; the sympathetic nerve, with its tissue of ganglia, as the negative or unconscious pole. In the somnambulist state the vital power is driven from the brain or conscious pole to the sympathetic nerve or unconscious pole, whose larger tissues, especially the "plexus solaris," are turned into a "sensorium," which, as if by substitution, performs the functions of the brain. This was supposed to account for the assertion by somnambulists that their consciousness has its seat in the pit of the stomach. The influence of the magnetizer on the patient was regarded as the action of the outer nervous pole (the brain) of the magnetizer on the corresponding positive pole of the patient, the former repelling the latter, according to the general law of polarization, by which means the nervous power of the magnetizer is concentrated on the nega-

¹ For a full account of these physicians see Bass' History of Medicine.

tive pole of the inner nervous system, the ganglia of the stomach of the patient. Other phases of the same kind of doctrine were dominant with regard to the relation between the brain and metals. Metals were the simplest and most primitive production of the creative force, and consequently were diametrically opposed to the brain. Metal reduces will to its primitive being. The positive or conscious pole in somnambulists is accordingly peculiarly sensitive to contact with metals, etc., etc.

Not only in the special sciences did this galvanic mythology have its sway, it also became deeply rooted in the fundamental constitution of philosophic thought. The tendency of the scientific age is well illustrated by a passage from Schelling. "In the highest perfection of natural science," he says, "the phenomenal or material element must disappear entirely, and only the laws, or formal element, remain. The more law becomes apparent in nature, the more the hull or wrapping disappears; the phenomena themselves become more spiritual, and at last cease altogether. Optical phenomena are nothing more than a system of geometry whose lines are drawn by the light, and the material nature of this light itself is already doubtful. In the phenomena of *magnetism all trace of matter has already vanished*. . . ." ¹ At first sight we might view this tendency as bordering on a genuine idealism, but on closer observation it will be seen that this is not so. It is only a certain conception of matter, matter as a "coarse bulk," and not matter as such that tends to vanish, and what is substituted for it is itself of material origin. In the phenomena of magnetism all trace of matter in the ordinary meaning of the word may have indeed already vanished, but the remaining phenomenon of polarity is not therefore idealistic; it is still material force, and might be called spiritualism or mystic-materialism, but not logical idealism. The illustration which Schelling regards most complete, the illustration of magnetism in which *all trace of matter has already vanished*, shows us clearly the root of this whole tendency to discard "the phenomenal or material element." It is the conception of polarity. Single force or laws of single force could not possibly appear to supply the place of matter; only when force presented itself in the Janus-like form of polarity did it appear able to do this. And only when polarity was read very extensively into the many forces and phenomena of nature did the material element become properly attenuated and appear to vanish. And this is what we find: the conception of polarity being extensively read into the phenomena of nature and the material element as fastly disappearing. There seemed to be polarity in everything. Polarity in the universal law of gravitation, in the form of a ratio of the squares of times to the cubes of distances passed over. Polarity in all mechanical force in its absolute and independent form, namely, the polarity expressed in the union of centripetal and centrifugal force. There is polarity in the colors, the proper objects of optical science. Polarity in the proper objects of mathematical science; for example, in the ratio of the centre to the circumference of the circle. Polarity in more or less explicit form in the proper objects of all the special sciences, inductive and deductive. There is polarity also in the laws of the social sciences. Thus Hegel gives forth a doctrine of social chemism; and the one category of chemism in Hegel's time we saw was polarity. This galvanic chemism is what takes place in the acquisition of a new language. The German "Gauner-

¹ Werke, I, iii, 340 (quoted from A. Seth, *Hegelianism and Personality*).

sprache" is a chemism of Hebrew and German. The morals and customs of families, states and nations are all outward manifestations of inward social chemism. The same principle is applied to politics, religion and æsthetics. There are polar opposites in politics; for example, anarchism and despotism, each of which when pushed to its extreme, veers round into its opposite. There are polar opposites in religion, the Father and the Son, and the higher unity in the Holy Spirit. There are polar opposites in æsthetics, in tastes; for example, the French romantic and the antique, the neutralization of which two formed the normal taste under Ludwig XIV. Everywhere in nature, everywhere in experience, that two opposed facts could be found standing near to each other, they were conceived to be, now in more, now in less disguised or conscious form, further examples of the electrical category of polarity. The whole world began to appear as nothing more nor less than an infinity of antinomies. Kant in his studies of the four special objects of cosmology recognized what he termed four antinomies of reason. But why leave them in the "realm of shades?" Why any longer look upon them as dead, static, contradictions of reason? Filled with the living power of polarity, they will become four more of those living contradictions which move the world. The antinomies of reason and the polar antinomies of nature are the same antinomies; and the *vitality* of the latter must be read into the former. And they are not four, but spread out *ad infinitum* throughout the rational constitution of the whole universe; they appear in all objects of every kind, in all conceptions, notions and ideas. Every actual thing was thus conceived to involve the co-existence of polar elements. Every element of nature must have its opposite pole, or, as Hegel says, "its own other." The whole world of experience seemed to fall apart into the quaint polarities of Mind-Nature, Subject-Object, Ego-Non-Ego, Thought-Feeling, Sensory-Motor, Active-Passive, Irritability-Sensibility, Male-Female, Day-Night, Good-Evil, Necessity-Contingency, Pleasure-Pain, Vitality-Mortality, Matter-Form, Attraction-Repulsion, Centre-Circumference, Centripetal-Centrifugal, Universal-Singular, Identity-Difference, Organic-Inorganic, Acid-Alkali, Oxygen-Hydrogen, Magnetism-Electricity, Anarchy-Despotism, Father-Son, etc., etc. Polarity everywhere, polarity everything; this was the fundamental category in all knowledge, in science, socialism, politics, religion, appearing sometimes "with open breast" and sometimes in subtle disguise, but always essentially the same category, whether expressed in such forms as the physico-philosophy of Oken or the social chemism of Hegel.

Such, then, was the condition of the scientific age which gave birth to the philosophical system of Hegel. Knowing this, we are not surprised to find Hegel, as he surveys the world about him, philosophizing thus: "Everything that surrounds us may be viewed as an instance of dialectic. We are aware that everything finite, instead of being inflexible and ultimate, is rather changeable and transient; and this is exactly what we mean by that dialectic of the finite, by which the finite, as implicitly other than what it is, is forced to surrender its own immediate or natural being, and to turn suddenly into its opposite."¹ "Everything is opposite. Neither in heaven nor in earth, neither in the world of mind nor of nature, is there anywhere such an abstract, 'either-or' as the understanding maintains."² "Wherever there is movement, wherever there is

¹ Wallace's Hegel's Logic, p. 128.

² *Ibid.*, p. 192.

life, wherever anything is carried into effect in the actual world, there dialectic is at work. It is also the soul of all knowledge that is truly scientific." "Every abstract form of the understanding, taken precisely as it is given, naturally veers round into its opposite."¹ "Contradiction, above all things, is what moves the world, and it is ridiculous to say that contradiction is unthinkable."

Let us now turn our attention to Hegel's logic with a view to determining what part the category of polarity played in the formation of his system.

As we go on with this investigation let the object of our search be well defined. We recognize in Hegel the laborious and comprehensive student, the patient observer of facts. We recognize in his work the value of the vast number of important facts which pass before us in the "march of the object" towards its completion in the motion. We recognize the profound philosophical criticism of previous systems which accompanies nearly every step of the dialectical evolution. We can agree with many of the general conclusions. But with all these things we have nothing to do. What we must confine ourselves to is the Hegelian philosophy in so far as it is a distinct system. Our question is not concerned with the value of the facts observed and collected, but with Hegel's peculiar interpretation of these facts. It is concerned especially as to the nature of the one fundamental principle of the system. What is it? And with what aptness has it been applied to the facts of experience? Hegel is dissatisfied with the limited problem of the *Erkenntnistheorie* of Kant as to whether the categories are subjective or objective; he is tired of the bare formalism of the Fichtean idealism; and is indignant over the abstract identity of Schelling. With firm faith in the objective validity of reason and strong determination to rid himself entirely of abstract formalism, he plunges anew into the world of experience, grasps his philosophical principle from the essential constitution of objective fact, and rests not until he has followed its evolution into its most concrete details. Such is his profession. Granted there is a sense in which all this is true, our question still maintains its validity. It now formulates itself thus: Has the principle been grasped from the absolute and eternal nature of facts, or has it been taken only from the nature of facts as apperceived under the most interesting scientific category of the age? Is it a principle of pure thought or is it founded in experience? Is it eternally true, or has it a psychological basis and history? Or, to state the question more definitely, how far is it a principle of pure thought and how far is it determined by that galvanic mysticism in the midst of which it was evolved?

By making a general survey of the procedure in the logic, one can readily observe that the method and phraseology used are pre-eminently like those used in the science of galvanism. The one principle of movement which is over and over again repeated throughout the whole system is that of the affirmation, negation, unity of the two; or positive, negative, indifference-point. The process begins with being. Being is positive; nought is its negative aspect; the result is becoming. Then the same process begins again. Becoming has a positive aspect—an aspect of immediacy—it is being-determinate. Being-determinate begins the process as "somewhat," which is positive; the negative is "other;" the new result is being-for-self. And so the evolution goes on, the same triple movement being repeated again and again, with no new

¹ *Ibid.*, p. 127.

element save that contained in the variety of facts which present themselves for arrangement.

But this consideration is external. Hegel might be thus indebted to electric science for his peculiar phraseology, and yet have obtained his fundamental principle from an entirely different and supremely higher source. Accordingly, the evidence which is to have validity in determining the question must be internal. What we must do, therefore, is to make an internal criticism of the logic.

If there is one place more than another in all the logic where the nerve of Hegel's philosophical principle is laid bare, it is in the doctrine of essence. In this, we find the essential foundation of the dialectic made explicit. And the nerve of the doctrine of essence is the relation of identity and difference. These two categories standing together in a certain peculiar relation, form the basis of the whole logical procedure. In every step of the evolution, we find them actively present. In the doctrine of essence, Hegel, for the first time, makes explicit what he means by them, and what particular kind of relation he conceives to exist between them. If we learn this well, then, we practically learn all.

Hegel begins his account of these categories with a statement of some true and very important facts concerning them. The position adhered to in the "formal logic" with regard to them is stated and criticised. The inconsistency and untenability of such notions as "abstract identity" and "abstract difference" or "mere variety" are clearly set forth. The indivisibility of identity and difference is insisted upon. Whenever we reflect on the notion of identity, we see that it implies difference; whenever we reflect on the meaning of difference, we find that it implies identity, etc., etc. But in all these criticisms and statements of facts, he is not yet stating his principle of interpretation; he is only preparing the way for it. Now let us see how he states his interpretation. He begins thus: "Difference implicit or in itself is a difference of the essence, and includes both the *positive* and *negative*, and that in this way: The positive is the identical connection of self in such a way as not to be negative, and the negative is the different by itself so as not to be positive. Thus either is on its own account, in proportion as it is not the other. The one shows in the other, and is only in so far as that other is."¹ So far anyone will readily observe that what is stated is the theory of the relation between positive and negative in electricity. But he continues: "The essential difference is, therefore, opposition; according to which the different is not faced by *any* other but by *its own* other or special antithesis."¹ This last passage gives us the key to the whole matter. If we fully grasp all that is implied in this peculiar kind of "opposition," in which the different is not faced by *any* other but by *its own* other, it will at once appear clear that the principle cannot be one of pure logic or pure thought. Professor A. Seth, in his work entitled "Hegelianism and Personality," says: "The opposition which Hegel makes his fulcrum is contrary or real opposition; the second is not simply the negative of the first, but both are real determinations of things. But if this is so, then the first does not of itself strike round into its opposite. The opposite arises for a subjective reflection which has the advantage of acquaintance with the real world." This is undoubtedly true. The dialectical evolution cannot possibly be a process of pure thought. The opposition is *real*; the two elements are *real* determinations of things, and consequently must be learned through experience. But I think there is still more definiteness implied in Hegel's opposition.

¹ Wallace's Hegel's Logic, p. 189.

It is restricted not only to *real* opposition, but it is a *particular kind* of real opposition. Each element has *its own other*, its own special antithesis. Now this is not necessarily even a matter of experience—that is, of necessary experience. It would require a *particular* experience to know the special opposition of things. The opposition is not of the nature of that opposition with which we are acquainted in general experience—it is a very peculiar kind of opposition. Now what is it? How does Hegel define it? The best definition he can find is the conception of polarity in physics—not the best *illustration*, but the best *definition*. “The conception of polarity,” he says, “which is so dominant in physics, contains by implication the more correct definition of opposition.”¹

Let us stop a moment and reflect. As we read Hegel's description of his fundamental principle in this chapter on essence, and watch him drawing it out, as he professes, from the rational constitution of things, can we observe whence he is taking it? Is he taking it from logic or from physics? It certainly does not savor of logic. If it is logic, it is certainly an entirely novel kind of logic. Nothing is more detestable in Hegel's sight than the “ordinary logic.” He takes its matter as his matter, but gives it an entirely new setting. Now what does this new setting amount to? What is he really doing? Is he not just reading into logic the “polarity science” which was so dominant at his time? The conception of polarity had been well spread through the physical sciences by others. Hegel recognizes this. “In modern physical science,” he says, “the opposition first observed to exist in magnetism as polarity, has come to be regarded as a universal law pervading the whole of nature.”² And he approves of this as “a genuine advance in science.” But no one as yet had applied the conception to the sphere of thought. Physicists, when they had any speculation to do in this sphere, still adhered to the old formal logic. And Hegel contemptuously disapproves of this. After urging the conception of “polarity” as the more correct definition of that “opposition” which he makes the fulcrum of his dialectic, he finds fault with the physical scientists thus: “But physics, when it has to deal with thoughts, adheres to the ordinary logic; and it may, therefore, well be horrified in case it should ever expand the conception of polarity, and see the thoughts which are implied in it.”³

I do not mean to say that Hegel is consciously trying to apply the physical category of polarity to logic. He is not trying to give a physical interpretation of thought. His aim and procedure are far above such type of materialism. What he means to do is rather to apply the principle implied in the physical conception to the constitution of thought. But how much of what is implied in “polarity” does he show us? Simply nothing. The one principle or conception which remains with him wholly uncriticised throughout is the conception of polarity. The very kind of polar behavior which we perceive in physical phenomena is exactly the same behavior which we observe in the dialectic. Whenever Hegel reaches this peculiar kind of behavior, he is satisfied; he has no desire to go any further. He never asks whether this behavior is itself rational. As a rational principle, it is as unintelligible in Hegel's applications of it as it is in the phenomena of electricity. Consequently, it is the bare physical conception which forms the type of thought under which he apperceives the matter of logic.

¹ Wallace's Hegel's Logic, p. 191.

² Wallace's Hegel's Logic, p. 192.

³ Wallace's Hegel's Logic, p. 191.

This conception of polarity we find at the heart of all the most important definitions of his principle. "Positive and negative," he continues, "are, therefore, intrinsically conditioned by one another, and have a being only when they are connectively referred to each other. The north pole of the magnet cannot be without the south pole, and *vice versa*. If we cut a magnet in two, we have not a north pole in one piece and a south pole in another. Similarly, in electricity, the positive and the negative are not two diverse and independent fluids. In opposition, the different is not followed by any other, but by its own other. Usually we regard different things as unaffected by each other. Thus we say: I am a human being, and around me are air, water, animals, and all sorts of things. Everything is thus put outside of every other. But the aim of philosophy is to banish indifference and to learn the necessity of things. By that means, the other is seen to stand over against its other. Thus, for example, inorganic nature is not to be considered merely something else than organic nature, but the necessary antithesis of it."¹

The fundamental laws in electrical phenomena are the repulsion of the homogeneous and the attraction of the heterogeneous, which are in reality only two phases of the same law. In this law, Hegel sees the unity of attraction and repulsion. Thus the positive and negative, in so far as they are positive and negative, are heterogeneous, and already involve *repulsion*. But the positive and negative are always attracting each other. Hence, we never find repulsion without attraction. So, conversely, we never find attraction without repulsion. Homogeneity means abstract attraction—that is, attraction as it would exist without repulsion. But the homogeneous always repel; hence, attraction involves repulsion. Now Hegel treats this law as a universal principle of reason, and it is the one law on which he falls back for all his explanations. In this way, for example, he explains infinity. If we look upon the relation between "somewhat" and "other" as mere repulsion—as heterogeneous, we get an endless progression—a bastard infinity. But if we remember in this that the *unlike* always attract, we get the true infinity. The true infinite is not merely the opposition of the "somewhat" and "other," but the unity or attraction of them in their opposition—the unity of attraction and repulsion. In all this, we can readily see that Hegel is not proceeding from a logical source, but rather reading into the laws of logic the law of electric action. The so-called law of attraction and repulsion is not a universal law of reason as Hegel maintains; it is peculiar to the phenomena of electricity. Homogeneity is not absolute attraction nor is it like attraction; neither is heterogeneity repulsion.

Another consideration, closely connected with this, substantiates this view. Hegel's categories are all living, active things; they seem to be quickened with physical force. As Professor Seth says, they take upon themselves flesh and blood and actually walk into the air. Each finite category induces its opposite as positive induces negative electricity. Thus the heterogeneity in the "one and the many" is actual repulsion. "The one manifests an utter incompatibility with self, a self-repulsion; and what it makes itself explicitly be is the many." So the opposition between "somewhat" and "other" is not merely logical distinction, but real physical change; it is the real alteration or mutability of the physical world², etc., etc. Some explain this by saying that the chief characteristic

¹ Wallace's Hegel's Logic, p. 191.

² Wallace's Hegel's Logic, p. 149.

of Hegel's system is that it is the unity of logic and metaphysics — a logic that is at the same time a metaphysic, and claim this as "the beauty" of the system. But the facts already noted lead us to believe differently. Hegel's logic is not the unity of logic and metaphysics; it is rather the unity of logic and speculative physics; and in this respect, there is no "beauty" in it.

Granted that Hegel got the first suggestion of his philosophical principle in the conception of polarity, it may still be maintained that he rose supremely above it, and latterly used it only as an illustration. A position similar to this is held by Mr. W. T. Harris. "The language which Hegel uses," says Mr. Harris, "shows the road over which he traveled to the thought of this self-active essence presupposed by all phenomena. It indicates his studies of Schelling and his predecessors, Kant and Fichte. Hence, too, his illustration of his thoughts. He calls up the law of universal gravitation as the very notion itself of law as lying behind the play of forces. It is that which constitutes its great significance, he tells us. So, too, electricity, which as simple power manifests itself as self-opposition or polarity of positive and negative. Gravitation, too, has polarization or duality, taking the form of time and space relations, the ratio of the squares of times to the cubes of distances passed over. We can see how Schelling's symbol of polarity and the point of indifference are the original subject of Hegel's investigation here, and that he thought it out in this universal form, changing a symbol derived from a mere particular object, a magnet, into general abstract thoughts—pure thoughts."¹ The process by which the empirical conception is changed into pure thought is illustrated thus: "The magnet, for example, was a brilliant metaphor and stimulated reflection at first. But owing to its peculiar limitations, which made it only a magnet and not the World-Spirit, it soon began to mislead. . . . For the magnet's poles are mere north and south directions, and not subject and object as in consciousness."²

We can fully agree with Mr. Harris until he brings us to the process of transforming empirical into pure thoughts. The wonderful metamorphosis takes place upon transferring the thought from the magnet to the World-Spirit. Let us not be carried away by the sublime transition. Such a transition avails us nothing. It does not make my conception of atoms one whit purer to say that atoms constitute the essence of the World-Spirit; it only makes it more mystical. Certainly an apperceiving thought is often transformed and enriched through its application to new facts. This is a law of apperception. For example, in the history of science it often happens that some discovery, at the same time it is apperceived, transforms the whole system of our knowledge. No better illustration of this can be found, perhaps, than the discovery of galvanism, which we have already considered. But this psychological fact must be distinguished from that for which Mr. Harris contends. We find that all such transformations and enrichments proceed from the side of experience; that the new observation in order to be enriching must be an actual and interesting *sense* experience; and that apperceiving ideas are very slightly enriched in their application to speculative objects, but rather are made mystical. Consequently, no difference what object, and however sublime it may be, to which an empirical thought may be applied, it can never be changed into a pure thought in the Hegelian sense of the term.

¹ Hegel's Logic, p. 70 (Grigg's Phil. Cla., 1890).

² *Ibid.*, p. 71.

Another possible interpretation of Mr. Harris' view is this. The thought is pure from the first. The experience of the phenomena of magnetism serves as the occasion for its first imperfect realization. The transition to the World-Spirit makes it at home with itself and reveals it in its purity. The pure thought is the thought of "self-opposition." But to this we may answer: The principle of self-opposition is not a pure thought, it is only a postulate—an empirical postulate. It has been from the first a postulate of physical science just as the atomic theory is a postulate of physical science; it is of great value as a postulate just as the atomic theory is valuable, but as a *real* principle of pure thought or pure magnetism, or pure anything else, it is as unintelligible as the infinitely infinite number of atoms which would be necessary to the constitution of the physical world.

Schelling's philosophy is based on the symbol of the magnet. But Hegel's principle is an advance over that of Schelling, and this, Mr. Harris from another point of view attempts to show, is a step taken from the physical symbol to pure thoughts. Schelling's absolute corresponds to the "indifference point" of the magnet. Now this indifference point is wholly devoid of polarity, a mere indifference utterly indeterminate—a sort of zero or nothing. The one pole is mind and the other nature, and the absolute essence is the point of indifference, a substance that is neither mind nor matter. This absolute accordingly transcends not only matter, but also intelligence; it is a supreme unity utterly devoid of determination; it is, as Hegel says, no better than the night, in which all cows are black. Now Hegel's conception of the absolute is very different. Schelling laid all stress on the indifference point or identity of the two poles. Hegel conceives that this is important, but that it is not all; the polar opposition or difference is equally as important. Schelling's absolute cannot be called the creator, "for to create is to impart substance and existence, and such impartation would be self-separation and not 'indifference,' but rather a polar difference of positive and negative, or active and passive within itself."¹ This emphasis of difference or polar opposition, then, is the advance made by Hegel. In this, however, he is not at all transcending the symbol of magnetism. He is only presenting a more complete view of magnetic phenomena. He grasps the magnet as a totality. The all-important aspect of it is not the indifference-point: the opposition of the poles is equally important. These two phases of agency always stand together in the conception of the magnet as a totality, namely, the identity of the two poles in the indifference point and their opposition at the poles themselves. Thus we have the supreme law of Hegelism: the unity of attraction and repulsion—the unity of identity and difference without the destruction of either.

The philosophy of Schelling is characteristically distinguished as the philosophy of identity. That of Hegel may be characterized as the philosophy of the syllogism. The syllogism, however, taken "not as it was understood in the old formal logic, but at its real value," in which "it gives expression to the law that every particular thing is a middle term which *fuses* together the extremes of the universal and the singular."² The conceptions of both philosophers are based on the conception of magnetism, and the difference between the conceptions is due to the difference in their views of the magnet. For Schelling the magnet was Identity, for Hegel it was the Syllogism.³

¹ Harris' Hegel's Logic, p. 71.

² Wallace's Hegel's Logic, pp. 41, 42.

What we have accomplished thus far is a consideration of the Hegelian principle as such. We have considered some of the most important points of the definition and illustration which are calculated to give the most direct evidence as to the nature of that peculiar kind of relation which Hegel conceived to contribute the rational essence of things. The New-Hegelians follow him in the general conclusion that the essential nature of the world consists in "relations." But this position is much more general and indefinite than that of the master. His, as we have seen, is a peculiar kind of relation. And from his definitions, descriptions and illustrations of it, our only conclusion is that it is the relation of polarity as presented in the physical phenomena of electricity. Let this suffice, then, for direct evidence; we shall now consider some points of indirect evidence. We shall consider briefly the principle in its application to the problems of philosophy, with a view to determining how far this psychological interpretation will account for some of the chief difficulties and short-comings of the Hegelian philosophy.

Let us first consider the dialectic as an evolution of thought. Is it a purely sympathetic process? or is it after all an empirical process? This is a dispute of long standing among the critics of Hegel. Trendelenburg and his followers maintain that the procedure of the evolution is not an original synthesis, but a sort of empirical synthesis which is the result of a previous analysis or abstraction. All the elements of thoughts, according to this school of critics, in their original form are intimately united in the concrete forms of experience. By abstraction these elements are violently held apart. What is thus violated by abstraction, however, cannot but strive to escape from this forced position; it must strive to complete itself. When this completion takes place there will arise a new conception which contains the former in itself. This new conception, again, will repeat the process; and so the evolution will go on until the full reality and concreteness of perception have been restored. Thus, for example, "if Becoming is clear to us through perception, there may easily be distinguished in it the moments of Being and Non-Being. Thus while day is dawning, we may say 'it is already day,' and also 'it is not day.' We separate and distinguish these moments in Becoming as actually observed, *but without in the least understanding logically* the characteristic of real existence in virtue of which they are present together."¹ The motionless ideas of Pure Being and Pure Nothing could never of themselves give rise to the movement of Becoming unless the idea of becoming were presupposed. The synthesis in the movement, then, is not a true synthesis; it is due to previous experience; a retracing of our steps from the concrete to the abstract. Such is the view of the Trendelenburg school. But perhaps a larger number of critics maintain, on the other hand, that the synthesis is a real one, pure, original. And indeed this view corresponds more faithfully with the profession of Hegel. The open pretence of the dialectic is that it is an entirely presupposition movement; a real evolution of one category out of another. The criticism contained in the dialectic is not the criticism of an external subjective reflection, but an immanent criticism of one category by another; the march of the object itself. And so the discussion goes on. There seems to be a good deal of truth on both sides of the question. From the purely philosophical standpoint the question is a source of real perplexity. Only one of these views can be philosophically true; yet in the Hegelian system both are clearly observable. Now how are we to account for this difficulty?

¹ Trendelenburg, "Logische Untersuchungen," 1, 33.

According to the psychological view for which we are contending, there are two lines of thought which must run parallel throughout Hegel's system: first, there is the series of facts which he brings up for explanation, and secondly, the principle which he reads into these facts. The real facts of thought-evolution which he observes and endeavors to explain, are the facts noted in the view of the Trendelenburg critics; the living synthesis implied in the attraction and repulsion of electric agency is the pure and original synthesis noted by the opposing school of critics.

That the real synthesis apparent in the Dialectic is just the conception of electric synthesis and nothing more is evident from many considerations. It is clearly implied in many facts we have already noted. We have already seen, for example, that the categories are living things, expressing themselves in such forms as physical mutability, etc. And when a category brings about its opposite in the dialectic, it does so not by the power of a mere logical *distinction*, but it does so actually and really, as if by electric *induction*. Again when Hegel speaks of the sciences of magnetism, electricity and chemistry in the *Naturphilosophie*, what does he call them? "The dialectical sciences." He calls the principle of these sciences "dialectic." Hegel's descriptions of the synthetic process are full of such evidences. In all his descriptions of the synthesis one can see no description which will not apply to electrical phenomena. What, then, are we to say? Our answer must be that, in so far as Hegel tells us what the synthetic principle *is*, we are to understand by it nothing more than the principle of electricity. But the advocate for pure synthesis has one more chance. If he has failed to convince us by telling us what the principle *is*, he may accomplish his project by showing us what it *does*. If the principle is one of rational synthesis it must show itself as a source of real development; it must actually develop into the various stages presented in the dialectic. If it can do this we must admit without further discussion that it is a real principle of reason above and beyond the descriptions of it which we have already observed.

But can it do this? A careful observation of the procedure in the *Logic* will convince any unbiased observer that in this also it fails. The real advances made in the evolution all seem to be made possible only by reference to experience; they belong to the kind of procedure noted by the Trendelenburg critics. Synthetic process, it will be noticed, is always at a standstill; it never develops into anything, but is ever the same old process repeated over and over again. Take, for example, the section of the evolution beginning at identity. Let us suppose that we understand the synthetic process by which identity and difference coalesce in the "ground." Now why does the evolution not stop here? What is the motor power that carries the process out of the ground? Let Hegel answer. "We must be careful, when we say that the ground is the unity of identity and difference, not to understand an abstract identity. Otherwise we only change the name, while we still think the identity of understanding which has been already proved to be false. To avoid this misconception we may say the ground, besides being the unity, is also the difference of identity and difference. The ground, which originally seemed to supersede and swallow up contradiction, thus presents to us a new contradiction."¹ We see by this that the synthetic process which is to take place in the next triad after mediation of identity and difference in the ground, is gotten by a bald repetition of the old process;

¹ Wallace's Hegel's *Logic*, p. 193.

the ground, which is a category taken from experience in order to be made synthetic, is apperceived as "the *identity* and *difference* of identity and difference." In this we can observe the true method of Hegel's artful procedure. The synthetic principle itself does not develop, but is always static, always the same; and the secret of its activity seems to be that it is repeatedly read into the development that really does take place, namely, the development due to empirical association. This is the method throughout the whole system. Hegel never tires of warning us that such phrases as "being and nothing are the same," or "the unity of being and nothing," and all other such unities, that of subject and object, and others, misrepresent the facts by giving an exclusive prominence to the unity, and leaving the difference which undoubtedly exists in it without any express mention or notice. The immediacy or unity expressed in the third category in each triad is thus only a farce as far as the synthetic evolution is concerned; what must be done in order to get a synthetic movement in each new triad is to repeat the old process. Thus we observe that the so-called synthetic principle has nothing whatever to do with the real development; it does not develop at all, but is only repeated. Hegel, however, so artfully mixes up this repeated synthesis with the steps of the real evolution, that it is very difficult to distinguish them. Hence the double aspect of the dialectic. The substance of our conclusion, then, is this: The evolution of thought in so far as Hegel presents it as synthetic is an evolution that never advances a step, an evolution which is nothing more than the repetition in each triad of the category of polarity; and the development which really does take place is the movement from abstraction to the concrete forms of experience.

The real principle of development in the dialectic, then, is the psychological principle implied in the empirical facts brought up for explanation, and not the principle which Hegel endeavors to read into these facts. And this, we shall find, is the really valuable thing and centre of attraction throughout the whole system, namely, the empirical facts observed, and not the interpretation given. What is, we ask, the great centre of attraction in the Hegelian Logic? Probably his treatment and application of the central categories of identity and difference. Now what is so attractive in his discussion of these categories? Undoubtedly it is some great truth which lies hidden somewhere in his theory of the essential relativity of thought. "All knowledge consists in relations," say the New-Hegelians. "The whole world is essentially made up of thought relations." This is the attractive point. But what is the great truth we find beneath this doctrine of "thought-relations?" It is that the laws of the relativity of thought are ultimately not logical laws at all, but physiological. This is a great fact proved beyond reasonable doubt by experiment, namely, that the so-called "relativity" is ultimately not the relativity of consciousness, but the relativity of sensations. And what makes Hegel's treatment of identity and difference so attractive is that it contains within it a comparatively accurate statement of the laws of discriminative sensibility. In my paper on Natural Realism I endeavored to show that the facts which the realists aimed at expressing were the laws of tactual perception, and that in these ultimate facts of tactile sensibility lay the attractive centre of their doctrine. So here the facts which Hegel is striving to express in this discussion are the physiological laws of discriminative sensibility, and in this lies the really valuable and attractive element of his doctrine. And so in the case of all the categories: the valuable and attractive thing is

not the interpretation given, but the statement of the facts themselves.

We have examined the principle as a principle of development: now let us examine it as a principle of explanation. In this capacity also, we shall find that it does not vindicate its right to be called a principle of universal reason. We said before that the one conception which remains wholly uncriticised with Hegel is the conception of polarity. Now we shall find that his uncritical application of this conception to the nature of reason is the chief source of his errors in philosophical explanation. The powerful opposition which moves the world does not prove itself rational. Its insufficiency as a rational principle presents itself in its root form in the highest stage of the dialectical opposition, the opposition between mind and nature. Nature is the "other" of mind—its special antithesis. We are told that nature is implicitly mind, and therefore ultimately rational. Let us admit that we are satisfied with this half of the interpretation. But there is the other half which is equally important. Nature is the "other" or special antithesis of mind, and in this respect it is irrational. Now how is this phase of nature explained? Hegel occasionally calls it "illusion," but his more explicit statements of the doctrine clearly show that "illusion" does not at all express what he means. And indeed we can readily see the truth of this if we remember that "illusion" is a category which is applicable only to psychological phenomena and not to the nature of reason. The "other," according to Hegel's genuine doctrine, must "have its scope;" it is a real, necessary thing in so far as it is "other," and must not be explained away. It is, in short, a real and definite phase of reason. Now here is the difficulty. The "other" is a real, definite, extensive irrationality which we must not attempt to rationalize, and yet Hegel insists that it is ultimately rational. This difficulty is not merely a little hole that can be picked in the system just at this point: it is a huge insufficiency that pervades all Hegelism, and can be observed in more or less explicit form in every stage of the dialectic. Let us look, for example, at the transition from teleology, which is the last stage of objectivity, to the idea. The finitude of the end or aim in teleology consists in the circumstance that, in the process of realizing it, the material which is employed as a means, is only externally subsumed under it and made conformable to it. The transition to the idea is explained thus: "But, as a matter of fact, the object is the notion implicitly; and thus when the notion, in the shape of end or aim, is realized in the object, we have but the manifestation of the inner nature of the object itself. Objectivity is thus only a shell or covering under which the notion lies concealed." Let us for a time admit the "matter of fact" that the object is the notion implicitly: but what about the opposition which has just been annulled? This is the essential point to be explained, and the only account we get of it at this time is that it is "a shell or covering under which the notion lies concealed." We may understand what is meant by the shell or covering of an oyster or a chestnut, but the shell or covering of reason is a metaphor which means nothing. But the curious thing about it all is that we are not supposed to understand the so-called "shell." It must have its scope as such, and the true explanation of it is that it is inexplicable. While the scope of objectivity is being emphasized, this is the view adhered to, but when the transition to the idea is made, it is subtly abandoned, and the view of ultimate rationality is put in its place. The two views are never harmonized, but each is sacrificed to the other according as objectivity or the idea is emphasized.

Take, as another illustration, the doctrine of contingency. Though "the contingent is only one side of the actual," yet as such it "has no less than the rest of the forms of the idea, its due office in the world of objects." "On the surface of nature, so to speak, chance ranges unchecked, and that contingency must simply be recognized, without the pretension which is sometimes, but erroneously, ascribed to philosophy, as seeking in it a necessary and rigidly fixed law. Nor is contingency less visible in the world of mind. The will, as we have already remarked, involves contingency under the shape of option or free-choice, but involves it only as a vanishing and abrogated element. In respect of mind and its effects, just as in the case of nature, we must guard against being misled by a well meant endeavor after rational knowledge, which would fain exhibit the necessity of phenomena which are marked by a decided contingency, and try, as the phrase is, to construe them *a priori*."¹

In this we see that chance ranges unchecked and must simply be recognized as such. The only explanation that can be given is simply to recognize that it exists in the world, and is in its essential nature irrational and inexplicable. The contingent, however, is only "one side of the actual." The other side is rational necessity, and the side of contingency when reviewed in its union with this, Hegel conceives is some way or other brought into a rational system. But in whatever way we may conceive this to be done we must be careful not to explain away the fact of contingency; it still must have its scope. Now the only possible way on these conditions to bring contingency within a rational system is to "lump it" and tie it mechanically to reason. But this is a mere jumble of words and contradiction of terms. By contingency we mean that we can give no rational account of why things are as they are and not otherwise. And to let contingency range unchecked without seeking in it rational knowledge, to leave it eternally as it is on the surface, and yet attempt to bring it within a rational system, amounts to saying that in the highest stage of reason we can have rational irrationalities. Thus the higher unity of reason in which Hegel harmonizes necessity and contingency is a reason in which anything may be anything else.

The same transparent fallacy may be again illustrated in the doctrine of identity and difference. The "other" of the rational element in this case is "mere variety." Mere variety by itself is untenable, but as the "other" it must have "its scope." It is the most common thing in the whole world. "Usually we regard different things as unaffected by each other. Thus we say: I am a human being, and around me are air, water, animals, and all sorts of things. Everything is thus put outside of every other."² The other side of the doctrine is expressed in the following statement that "the aim of philosophy is to banish indifference and to learn the necessity of things." But this aim of philosophy, according to Hegel's rendering of it, never reaches the inner fibres of the nature of variety—it only regards it externally. It never accounts for the fact of variety. It does not explain it, or even attempt to explain it: it rather regards it as a weak and unimportant thing and treats it with contempt.

We might go on with illustrations, but it seems unnecessary. The same fallacy appears in all the various forms which the central opposition between mind and nature assumes. Nature as the "un-aufgelösten Widerspruch" always remains a huge lump of matter, foreign to reason. Hegel seems to maintain that as such it is inex-

¹ Wallace's Hegel's Logic, p. 228.

² Wallace's Hegel's Logic, p. 191.

plicable, and that the true way to explain it is to ignore it. He does give it a kind of explanation, but not a philosophical explanation. It is a sort of wholesale explanation, an explanation which does not penetrate into the inner network of nature, but only gives it an external and mechanical connection in the rational system. The fundamental insufficiency of this explanation is very artfully concealed beneath the veil of the familiar category "immediacy." Immediacy serves as a great box into which he casts all the irrationalities of the world. He then closes up the box, calls it a moment in rational consciousness, and declares that by so doing he has rationalized all.

But Hegel will make one more attempt to overcome the difficulty. He will insist that the opposition between reason and nature is all the time within the bounds of reason. Thought overlaps nature, the subjective overlaps the objective; the former is always wealthier than the latter. And by means of this overlapping of the rational, the irrational is ultimately some way or other made rational. Reason is itself essentially a triple movement, embracing within its necessary activity both the opposition between itself and nature and their ultimate unification. The two movements are only two phases of the one essential activity of reason. Now this view does for a moment seem to lift us out of the difficulty. It is undoubtedly very attractive, and on the surface quite satisfactory. But on closer observation one will observe that such a doctrine holds good only when reason is regarded in the abstract. In all this talk about reason, we never bring into realization what we mean by it. We are, in all probability, thinking of something which has in common with reason very little more than the name. We might, with equal intelligence, talk of anything going through the same movements, for example, electricity. We have seen already that when Hegel regards reason in its actuality, this principle of triple movement is not applicable to it. He fails to read this abstract triple movement in the manifestations of reason in the real world, such as subjectivity and objectivity, identity and variety, necessity and contingency. If we regard reason in the concrete and try to apply this abstract principle to it, we shall find that we are necessarily led into one of two doctrines neither of which satisfies the end which Hegel claims to have accomplished. In the first place the application may mean that the opposition between mind and nature is ultimately wholly done away with; that in the fully realized idea it does not exist. But this would amount to a mere formal subjective type of idealism in which the whole value of objectivity would be lost, an idealism which would be ignored by Hegel. In the second place it may mean that the rigidity of the opposition is always maintained; that it is an eternal necessity of reason. This is undoubtedly Hegel's meaning. But the opposition is at the same time harmonized. Now what must be the nature of that higher unity which makes this harmony possible? It cannot be called reason—that is, the reason which is opposed to the irrational—for if that were the case the harmony of the opposition could mean nothing else than its complete destruction. Nature, we must remember, is opposed to the absolute and complete nature of reason; it is its special antithesis: the opposition is between rational and irrational. Consequently the one may conquer the other and thus bring about harmony, but in order to retain the opposition and yet become harmonized a third party is necessary in which they must receive this new relation. Thus, in this case, the principle of unity of the rational and irrational which Hegel still

calls reason, is in reality a principle which transcends both mind and nature, a principle identical with the absolute of Schelling.

The Hegelian principle, then, whatever it may be, is clearly not an ultimate principle of reason. Reason bends under its power. Rationality and irrationality are alike moments in it. The opposition which it makes between mind and nature is an opposition which transcends rationality, and any attempt to bring it within a rational system lands us either in subjective idealism or in a doctrine of blank identity. This is the case when we keep reason before us as a concrete reality. Only when we regard it in the abstract does the principle of triple movement seem applicable to it. Now how can we account for all this? What can the principle be? Putting together all the facts we have noted, have we not good reason to conclude that it is just the principle of polarity as observed in electric agency? In electric phenomena alone do we seem to experience an opposition which is annulled and at the same time retained. Is not this the principle of movement which Hegel reads into the laws of reason when he regards it in the abstract, and which lands him in contradiction when he attempts to make it concrete? The relation between mind and nature—what is it? Is not nature the negative induced by the positive, mind, and at the same time attracted by it? The powerful logical distinction which moves the world, which is not merely a distinction but a living power immanent in all physical movement—is it not electrical repulsion? The ultimate unity of the opposition or the "return-into-self"—does it mean anything more than what we understand by electrical attraction? Will not this interpretation give us an insight into the Hegelian philosophy which will clear away for us many of its perplexities, and account for its principal inadequacies?

We have traced briefly the influence of the discovery of galvanism on the scientific thought of Hegel's time. We have seen how the conception of polarity tacitly worked itself into the network of the whole intellectual world and became the central apperceiving thought in nearly all scientific and philosophic speculation. We have seen how the world consequently fell apart into an infinity of polar antinomies. In Hegel's *Logic* we have seen that his definitions and descriptions of his fundamental philosophic principle are nothing more than descriptions of the conception of polarity. We have considered this principle as a principle of development, and have found that, though it presents the appearance of a real synthetic movement, it plays no part in the real evolution of thought; that it remains the same throughout the evolution and is all through completely satisfied by the description of polarity. We have examined it as a principle of solution in the problems of philosophy and have found that it does not prove itself a principle of universal reason; that in this respect also it proves itself to be nothing more than the principle of galvanism. Our natural conclusion, then, is this: The age in which Hegel lived compelled him to stand between two great worlds, each full of contradictions. Behind him was the logical world pregnant with the Kantian antinomies of reason: before him lay the physical world charged with the polarities of electricity. The latter being his world of experience, becomes a part of his life, and constitutes his apperceiving thought; and in the life of this world he reads the former. It is thus he unites the two. This is his monism. This is his logic that is at the same time a metaphysic.

What, then, is the value of Hegelism? It is valuable in two respects. First, there is value in the facts which he so extensively and so accurately observes. And from this point of view there is

value in many of his general conclusions, for example, the acceptance, in a very general way, of anthropomorphism as the highest possible world conception, and the interpretation, in the same general way, of thought as a development. In these "generalities," as such, must consist the whole metaphysical value of the system; in Hegel's peculiar rendering of them, in the particular kind of anthropomorphism or development on which he insists, there is none. So, after all, the metaphysical value of the system may be said to be in the aim rather than in the accomplishment; it is ideal rather than real. But, secondly, there is another value which I think is more important and which is specially brought out by this investigation. It is a psychological and pedagogical value. In his endeavor to make the so-called ultimate principles of reason as exhibited in the science of logic conform to his newly conceived principle, Hegel necessarily freed thought from the fixed and apparently ultimate forms in which it had lain bound for centuries. In the successful application of his principle to logic there is involved a deep criticism of the nature of thought, which reveals the fact that the fixed conceptions and so-called ultimate principles of reason are merely finite forms of the "abstract understanding." In this spirit of radical criticism the most final forms of logical and mathematical science are set down as crystallizations of the empirical imagination: retaining, however, their due office as stages in the development of thought. In this criticism of the old forms and in the substitution of his own principle as the final form of thought, Hegel, no one can doubt, has met with wonderful success. Now what is the underlying possibility of this success? Hegel would have us believe that the secret of the whole matter is that he has discovered the one fundamental principle of reason. But our examination of the nature and application of this principle will not warrant this belief. The great truth revealed as a result of Hegel's successful treatment is not, as he professes, the *positive infinity* of thought, but rather its wonderful *plasticity*. The truth of the freedom of thought has been revealed, but not in the sense that the principle of freedom or positive infinity has been grasped. The work done by Hegel may be regarded as a great psychological experiment, through which he brings to light what a wonderfully plastic thing thought is. And in this consists the great educational value of Hegelism. A thorough study of it brings into activity the latent plasticity of the mind, thus lifting it out of its old ruts and prejudices, and giving it in consequence a spirit of independence and freedom.

If our main thesis is true, its value will be not so much its own truth as what it suggests. We are led to question that the fundamental principle of the universe has yet been discovered. Has philosophy yet attained that universal standpoint which it claims as its own, or is it still only one of the great number of things that go to make up the sum of life? The aim and spirit of philosophy, the aim which seeks to know the essential nature of things and gain a world-conception devoid of presupposition, we can safely endorse, but are we sure that the methods used are the best for realizing that aim? How far has the aim been accomplished? As we look over the various systems, do we find them presuppositionless? There seems to be an imperfection in the philosophic method, which leaves it satisfied with bringing to light some dominating presupposition of thought, without inquiring into its nature and history. It leaves it uncriticised and regards it as ultimate, when in truth it is far from being so. Thus what Hegel does is to bring into consciousness the central presupposition or apperceiving

thoughts of his intellectual world: but he does not ask what it is. By psychological criticism, we found it to be the conception of electric agency. In the history of galvanism it has its history. If, then, the imperfection of the philosophic method leaves it satisfied with *revealing* the presupposition, is it not the business of psychology to make good this imperfection by telling *what it is*? Psychology will not take the place of philosophy, but it can criticise and correct its methods. The philosopher must be a psychologist. In the history of philosophy there are scores of categories which, one may safely conjecture, have a psychological history. There are "unities" and "higher unities" and "double-faced unities;" "subjectivity" and "objectivity" and "subject-objectivity;" "self" and "not-self" and "return-into-self," etc., etc.; all undoubtedly significant and useful to a certain extent. But who can fully realize what is meant by them? Are they not all presuppositions awaiting psychological criticism? Again, in the history of science, if the discovery of galvanism has furnished the psychological history of one system of philosophy, may we not find the histories of others in the development of gravitation, wave-motion, and other epoch-making discoveries? Is there not a great work suggested here—a work that may be of inestimable value to both psychology and philosophy? What new relation it may reveal between these two departments of knowledge, and what benefits may accrue to both, will be seen only when the work is done. But the foretaste of the results is sufficient to warrant the investigation. Philosophy would at least be made conscious of its prejudices and delusive metaphors, and thus be equipped for a revolutionary advance to a higher standpoint. Psychology may find in the history of philosophy psychological phenomena in the widest bearings and most highly developed stages; as well as obtain the results of naturally-performed experiments which are unattainable in the laboratory.

I have much pleasure in expressing my indebtedness to President Hall for first suggesting that I should investigate the discovery of galvanism, with a view to finding the psychological basis of Hegelism; and also for valuable direction in the investigation.

NATIONAL DESTRUCTION AND CONSTRUCTION IN FRANCE
AS SEEN IN MODERN LITERATURE AND IN THE
NEO-CHRISTIAN MOVEMENT.

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In order better to understand the intellectual and moral state of the France of to-day, let us cast a glance over the past centuries.

In the XVIIth century the Christian faith was sovereign. A creed universally received, guided and limited intellectual activity. It was the time of the great pulpit orators, Bossuet, Bourdaloue, Fléchier, Massillon; the time of Fénelon, Racine and Pascal, all directly inspired by the Christian church. Scholasticism had not yet been superseded. The philosophers of the coming era, Descartes and Malebranche, took great care not to shock the received religious beliefs.

During the XVIIIth century the spirit of France changed. The materialistic philosophy triumphed with d'Alembert, Diderot, Helvétius, d'Olbach, Condorcet. There are no more Christian orators. The pious Racine has been succeeded on the theatre by Voltaire with his sardonic laughter. It is his spirit which dominates the century. Rousseau preaches his crusade against civilized society. If the leaders of the century be no more Christians, they are still dogmatic. The infallibility of reason and the all-sufficiency of science are the two articles of the new creed. These convictions had their great day during the French Revolution, and culminated in the cult of reason symbolized by a woman seated on the altar of the Christian faith dethroned.

The first half of the XIXth century is in striking contrast with the century just elapsed. Pure intellectual life had decreased during the closing troublous period.

The wars of the Revolution and of the empire, which led the French youth through the whole of Europe, brought in a new spirit and new morals. The multiplicity and the diversity of the points of view acquired during these travels in foreign and little known lands, induced dilettantism. After having lived for a quarter of a century of an intensely active life, breathed the fiery air of the Revolutionary period and drunk the intoxicating waters of Napoleon's successes, France was suddenly reduced to the tepid savor of passive life. Haunting dreams of grandeur, the need of quenching a thirst for strong sensations, the abundance of the physical energy accumulated during the gigantic struggles of the empire, produced a general malaise and a longing which found their expression in the literature of the time known as "Romantisme."

Science was progressing rapidly. The natural sciences had their great first representatives in Lamarck, Cuvier, Geoffroy Saint-Hilaire. Philosophy had Jouffroy and Auguste Comte. The Positivism of the latter and English Determinism tended to quiet the

restlessness. The Christian faith did not regain its lost ground, but it was more kindly treated.

As the century passes, men perceive more and more clearly that reason and science have not kept their promises. No more offerings are brought in open daylight to the Goddess Reason. Doubt and pessimism rise. Schopenhauer contributes his theories of which France was certainly not in need, and Renan adds to it his indifferent tranquillity and his nice taste for mystical sensations, and so we reach the débâcle of 1870.

Literature had changed with the development of the exact sciences and the accompanying agnostic tendencies in philosophy. The fantastic world, in which the over-excited imagination of the Romantics lived, vanished with them and sedate Naturalism replaced it. Its programme is the reproduction of life as it is, in all its crude reality. Flaubert, the de Goncourt, Zola, etc., lead the movement. Each one depicts to us a parcel of our miserable humanity. They all agree to make of life, of man, of woman in particular, a disheartening picture. No more ideal; it is all flesh, lust and fatality. Very happily this literary school by which France has been infected during the past years is doomed. A reaction against it has set in.

The Frenchman glories in the fact that his fatherland directed the chariot of progress in the past ages. He is gifted with a more delicate, a finer nature; his mind is more pliant, more subtle, than that of his German or English neighbors. He cannot live as easily as they of an exclusive intellectual life, for he is more true to the double unity of human nature and does not so easily sever his emotional from his intellectual life. His inertia is less, and he answers quicker to internal or external stimuli. Consequently, his oscillations are more numerous and more rapid. While the English people have not yet reacted to the practical conclusions of determinism, the French people have already tested it, experienced its insufficiency to satisfy the deepest needs of the heart, and are now struggling to shake off this incomplete philosophy by which they cannot live, in order to put in its place some belief which shall give rest to their tormented souls.

It seems to us that once more France is pointing out the way for a nearer approach to the practical truths of life.

The objectified consciousness of the race, as expressed in the Roman Catholic Christian religion and in Positivism, has been overgrown. The former does not answer to the enlarged mental life; the latter proves insufficient inasmuch as it does not recognize the claims of the religious nature. The French are left without a belief by which to direct their lives; they are adrift. They know it, and their conscious wandering in a world without issue and without meaning, vents itself in pessimism. Sensualism and, rarely, stoicism, in which they seek refuge, are not remedies but only phases of the disease.

What way out of this crisis will nature find? That is the question with which we are concerned in these lectures. We shall first seek, in literature, which is the expression of society, what is the spirit, what the moral and intellectual tendencies prevalent in French life; and subsequently, we shall consider the neo-Christian movement, its significance, and the claim it makes for the solution of the problem.

It is not our purpose to thoroughly perform this double task. Our ambition is limited to giving some idea of the remarkable transformation through which France is passing.

I. ARTIST SENSUALISTS; THE QUEST FOR NEW SENSATIONS;
Nihilism and Pessimism.

We begin with an extreme case of perverted sensualism, a person who, no doubt, does not represent exactly a great number of Parisians, but who, nevertheless, indicates well an existing tendency.

Remember that we move in the literary sphere, but do not believe on that account that what we shall say refers to or affects only a small group of persons, for in France nearly every one has a bit of literary culture, and every one is more or less directly—much more directly than in the United States—under the influence of the spirit which dominates the literary productions.

J. K. Huysmans, a novelist, called a great artist by many critics, published in 1892 a novel entitled "*A Rebours*" ("Turned around" or "Upside down"). It relates the life of des Esseintes, a Parisian gentleman; perhaps the author's own life with a little added relief. In the following *résumé* of the book, we shall follow as much as practicable its phraseology. The style, broken, rough, jerky, as the movement of an hysteric, intensely colored with a superabundance of strange words or strange combinations of words expressing some uncommon sensations, corresponds very well to the content of the book.

Des Esseintes was born of parents already affected by neurosis. He rapidly gets sick of the people with whom he is compelled to associate during his studies. He then seeks some palatable society among the men of letters. They, too, soon give him the nausea by their banality. Finally, after having tried divers milieux, "he understands that the world is mainly made up of swaggers and imbeciles." A single passion, woman, could have held him in spite of that universal disdain, but this passion, too, was used up. After having drunk to the last drop the illicit passions, "he came to practice the exceptional amours, the deviated joys." Then the end came; exhausted, his senses fell into lethargy. Impotency was approaching. Abominably tired of life, he withdrew at some distance from Paris, in a house furnished especially for the enjoyment of his satiated senses. There he sleeps during the day and is up during the night, for "the mind does not really get excited, and does not well crepitate except in the contact with darkness."

Days and days were spent in the choice of the colors of the furniture, of the carpets, of the draperies and tapestry. He wanted colors which would stand out in the factitious light of the lamps. Colors such as would give pleasure to weakened and nervous people whose sensual appetites need highly seasoned food. Orange, that irritating, diseased color, with its fictitious splendor, was finally decided upon for the dominating color; all the others were to blend with it.

Every part of the apartment was conceived to awaken in him vivacious and bizarre sensations. His dining-room simulated a steamer's cabin. Instead of windows, he had port-holes behind which an aquarium gave the illusion of the sea.

He did not want his bed-room simply rich and voluptuously comfortable; luxury is too insipid, and plain sensuality too vulgar. He desired to make of his chamber a monk-cell, but without the austere ugliness of these abodes of penitence and prayer. To conciliate these conflicting notions, "he arranged with gay objects a sad thing," or rather while preserving the natural ugly appearance of a cell, he contrived to give to the whole room a sort of elegant and distin-

guished air. Instead of a wash-stand, he made use of a piece of antique church furniture in the interior of which a urinal could find place; on it a prayer book remained in permanence. Only genuine church candles, reserved for the church services, were used in that room. One can easily imagine the *bizarre* sensations that such objects, put to such service in that pseudo-cell, would awaken.

The artificial appeared to Des Esseintes the distinguishing mark of man's genius. Nature has had its time; it has for good and all wearied, "by the disgusting uniformity of its landscapes and of its sky," the patient attention of the refined set. The moment has come when the artificial should be substituted to this "everlasting dotard." Des Esseintes praises himself with being an artist in all things. His literary preferences are for the writers of the Latin decadence. Lucan and Petronius are his favorites. Virgil is a vulgar pedant. However strange it may appear, our hero reads the church fathers, some of them at least. The Apologetic and the Treatise on Patience of Tertullien interest him. He reads with pleasure the Christian eloquence of Bourdaloue and of Bossuet, and also Pascal, whose austere pessimism and painful attrition go to his heart. It is useless to say that Barbey d'Aurevilly is among his friends, this wondrous cynic in whom bigotry is allied to sacrilegious impiety. Listen to his analysis of the charm of this diabolical union: "This state, so curious, does not consist only in wallowing in the excesses of the flesh . . . it consists essentially in sacrilegious practices, in a moral rebellion, in a spiritual debauch, in an ideal Christian aberration; it resides also in a joy moderated by the fear of punishment. The strength of Sadisme [from the Marquis de Sade] lies then in the inobservance of the Catholic precepts, nay more, in the following of them inverted, in committing, in order to mock the Christ, the sins which he most expressly cursed:—the pollution of the cult and carnal orgy."

Des Esseintes cultivated and enjoyed every one of his senses. He had in a little closet a set of small liquor barrels; by a clever contrivance, he could combine at will the liquors in his mouth. Every one of them corresponded to the sound of some instrument. The dry curacao, per inst., corresponded to the clarinet, "whose song is sourish and velveted; the krummel, to the hautboy, whose sonorous timbre speaks with a twang; the kirsh-wasser blows furiously the trumpet; the gin and the whiskey break through the palate with their screaming bursts of sound." Through skillful experiments, he had acquired the ability of playing on his tongue "silent melodies, mute funeral marches; to perform in his mouth solos of peppermint, duos of vespetro and of rhum," etc.

To pander to his sense of smell, he had had prepared perfumes with which he filled his apartments. It was now a rain of human essence, smelling of woman; then the scent of a manufactur or of chemical products; at another time, he injected in the room an odor which he called essence of blooming fields.

It goes without saying that physical troubles accompanied this extravagant life. Hallucinations of smell and of hearing, noises of the arteries, a dry regular cough, followed upon each other; later came irrepressible vomiting. Death stared him in the face. The doctor ordered peptone anal injections. Des Esseintes could not help, in spite of the extremity to which he was reduced, congratulating himself on this event which crowned the artificial existence he had arranged for himself. It would be delicious, thought he, if, after health regained, one could continue this simple way of taking food. Instead of spreading the table, one would have simply to set

down upon it the magisterial instrument and, in less than the time necessary to say grace, the repast would be over and the annoying and vulgar drudgery of an ordinary meal would thus be avoided.

At the idea that to avoid death he must of all necessity go back to Paris, and live in the company of his fellowmen, Des Esseintes falls into the blackest despair. Man's society is utterly abhorrent to him. Under this calamity the hunger for faith, which had showed itself repeatedly previously, becomes tyrannical. "Now that he had to re-enter life, he would have liked to be able to compel himself to possess faith, to incrustate it in himself, to screw it down in his soul, in order to shelter it from all those arguments which shake and uproot it. For des Esseintes, faith is belief in the Roman Catholic church; his religious notions go no further. But the more he craved for it, the more did Christ delay its visitation." His upward flights were repeatedly crushed down by one or the other "of the cursed discoveries which have destroyed the religious edifice from top to bottom since two centuries." It occurred to him, per instance, that shameless merchants made the sacred host with potato fecula, "now God refuses to descend in fecula. That was an undeniable fact; in the 2d vol. of his Moral Theology, His Excellency the Cardinal Gousset had treated logically this question, and according to him, potato fecula was in no way a competent matter for the Holy Sacrament. That perspective of being constantly duped, even at the holy table, was not made to deepen weakly grounded beliefs; and, moreover, how can you conceive of an omnipotence which finds its manifestations arrested by a handful of fecula or a taste of alcohol?"

However ridiculous this argumentation, however farcical religious needs thus expressed and thus repulsed may appear, we have here the representation, more or less exact, of the religious state of a large class of intelligent persons in France. Religion to them is the Roman Catholic faith; outside of it there is no religion. And the Roman Catholic religion is a whole, no part of which is non-essential, no part of which can be detached without destruction of the whole. This conception is indeed the sign of a very primitive, or rather, of a very abnormal religious development. But it exists and testifies to the perverse notions which Roman Catholicism and moral corruption have diffused among the people.

In spite of all objections, des Esseintes sees more and more that the reasonings of pessimism are powerless to alleviate his misery and that the impossible faith in a future life alone would give him peace. In a moment of half morbid anguish he exclaims, thinking of the life he is to resume in the midst of society: "Alas! Courage fails me, and my heart heaves. Oh, Saviour, have pity on the Christian who doubts, on the unbeliever who desires to believe, on the convict of life who must embark alone in the night under a starless firmament." These are the last words of "A Rebours."

Let us pass now to one of the precursors of the literary school which inscribes on its banner "Décadents." Towards the middle of the century a writer already known as the translator of Edgar Poe, Charles Baudelaire, published a volume of poetry with this significant title, *Fleurs du Mal* (Flowers of Evil). The time was fortunately not yet ripe for such productions. The volume aroused a tempest of indignation, and the author was prosecuted on the score of extravagant immorality.

It is to-day well-nigh impossible to talk French literature without at least mentioning Baudelaire. This is not the place to speak of his poetical talent; we are concerned only with his ideas and the moral

character of his works. Let it suffice to say that there has probably been no French poet who surpassed him in the powerful uses he made of the language. He fashioned a style which made possible the rendering of a series of things, of sensations and of effects unnamable and unknown before him. Every person who feels an artistic vocation believes it his duty and his privilege to admire his talent, whatever he may think of the author's moral nature. Baudelaire is the leader, and in some degree the source of inspiration of a large number of the most gifted artists in letters who came after him. He is the spring, where the literary youth craving for fame go and drink at their entrance in life. On account of that controlling influence, we have thought well to say a few words concerning him.

The whole of Baudelaire is in the *Fleurs du Mal*. The peculiar perfume which they exhale has no name. It is as a bouquet grown on a carrion, or, as some one has said, "an Eden of hell, where Death walks in company with Voluptuousness, her sister." The brilliant Théophile Gautier said, speaking of the book, "To give to the taste an unknown sensation is surely the greatest happiness (bonheur) that can fall to a writer, especially to a poet." Baudelaire has certainly had that joy. Another literary man exclaims, "You have lighted the artistic sky with a *rayon macabre*; you have created a new shudder." The same Gautier writes, "In order to depict these corruptions, he has found those morbidly rich tints of more or less advanced rot those roses of phthisis, those whites of chlorosis, those bilious yellow, those poisonous metallic greens, stinking copper arsenate,"

"L' Invitation au Voyage" is of an enchanting languor; it is as music to the ear, as a voluptuous caress to the flesh. In the land where he proposes taking his lady companion:

"There, nought but order, grace, is found,
And pleasure's calm voluptuous round."

In "La Cloche Fêlée" (the Cracked Bell), he compares himself to a bell tolling in the mist. "My soul is like a bell that's cracked, and when beset with cares, it fain would people with its songs the cold night airs. Not seldom its feeble and weak voice appears the rattle of some wounded one, forgotten and lone, who, beside a lake of blood, corpse-covered lies and dies, stirring not, amid a world of efforts." In his dedications, he does not forget Satan; to him he addresses litanies, beginning thus:

"O thou of angels all the fairest and most wise,
God by Fortune betrayed, bereft of eulogies,
O Satan, take compassion on my long distress!"

and this hideous supplication is repeated after every two verses:

"Adopted father thou, of those whom God has driven
In anger dark and fierce forth from the earthly heaven,
O Satan, take compassion on my long distress!"

He eulogizes the sterile woman, addresses his salutations to a certain "Queen of Sin," and delights in exciting descriptions of carnal feminine charms.

"Dear indolent, how fair a sight
Thy grace of body seems!
How like the stars' inconstant light,
Thy skin's soft gleams!"

¹ These translations from the *Fleurs du Mal* we owe to Dr. Chamberlain.

In his morbid malaise, lashed by unquenched desires, he exclaims: "No soul can fit a heart so deep and dark as mine but thine, Lady Macbeth, potent in crime and wrong." The following is an attempt at rendering perhaps the most strongly written sonnet in the French language. A sensitive nature could hardly read it in the original without remaining for long hours under its sinister impression.

SPLEEN.

"When the low-hanging sky like a dark cover weighs heavy on the groaning soul, a prey to griefs and cares, and, embracing the wide horizon's round, pours on us a day more dark, more sad than night,"

"When the earth is changed into a humid prison-cell, where hope flits to and fro like a poor bat, beating in aimless flight the walls with timid wing, striking its little head against the mouldering roof,"

"When huge trains of rain-drops in their fall mimic the bars of some vast dungeon, and a mute folk of horrid spiders cast and spin their webs deep in our brains,"

"Suddenly and furiously bells clash forth and fill the skies with frightful howls, resembling wandering, homeless spirits who in stubborn groans vent their long woes,"

"And through my brain moves the long procession of hearses, slowly, without the sound of music or of drum; hope, vanquished, weeps, and anguish, cruel and despotic, hoists her black flag over my prone head."

A few more words on the ideas of our poet. He was, it is useless to say after these quotations, a fatalist and a pessimist to the core of his heart. Progress, the great modern idea, was for him "an ecstasy of fly-catchers." "He held in profound horror philanthropists, utilitarians, humanitarians, and all those who pretend to change anything to the invariable nature and to the fatal organization of society." He loved the artificial, the after-touches made by art to nature. To a simple young girl, he preferred a ripe woman adorned with all the art of a learned coquetry.

His finely moulded nose, rather soft, with delicate palpitating nostrils, indicated well the subtlety of his sense of smell; "My soul hovers on perfumes as the soul of other men do on music," he used to say. One of his sonnets expresses beautifully his sensuality of smell:

CORRESPONDENCE.

"There are perfumes as fresh as little children's flesh,
Sweet as hautbois, green as the meadows,
And others, corrupt, rich and triumphant,
Having the expansion of infinite things
Like amber, musk, benzoin and incense,
That sing the transports of spirit and sense."

Charles Baudelaire died from paralysis. To-day a loud cry is raised by some persons asking that a statue be erected on a public place of Paris to this man whom justice prosecuted a few years ago.

SCHOOL OF THE DÉCADENTS.

But let us hasten further to the *School of the Décadents*. During the past ten or fifteen years a little group of blustering young men have caused a prolonged stir in France, and have drawn on them the attention of the public and of many of the literati by the eccentricity of their productions and of their theories. This movement is, it seems to me, highly interesting as marking the complete dissolution of all beliefs, of all restraints, of all rules, even of those rules which seem the most deeply rooted and the most necessary: French lassitude, French, or rather Parisian skepticism, no more a theoretical skepticism, but an assimilated skepticism, truly ruling and governing man, have no better example than this literary manifestation.

Some poetical talent is found among them combined with pretensions that call to mind the illusions of general paresis. *Baju*, e. g., in a pamphlet glorifying the Décadents, boldly declares that Naturalism has delighted those who are incapable of seeing and of feeling in any other way than by their senses. Naturalism is without ideas, it wallows in matter. To the Décadents was reserved the honorable task of crushing Naturalism and of creating a better taste, no more in contradiction with modern progress. He gives to the school a reformatory mission. "It attempts," says he, "to elevate the moral and intellectual level of the masses assailed by a deep disgust and an incurable spleen." This is no buffoonery; the writer is in dead earnest—or at least in as great earnest as he can be,—but he evidently is in the deepest confusion as to what morality is. He gives a satisfactory proof of this a little further, where he eulogizes Barbey d'Aurevilly, who so cleverly unites the sacrilegious to the holy. "Barbey d'Aurevilly is, if we believe Baju, the most colossal thinker of all ages. He is truly the writer of the century. Victor Hugo, who is held to be a giant, is nevertheless a dwarf by his side."—Enough of this.

What are the theories or the principles of the Décadents? They claim to be a school; they must hold some common doctrine, and so they do. Let me say, first, that the various men and the considerable literature generally named by this appellation, make up a heterogeneous mass without unity beyond a profound contempt for all received rules in the art of writing and a licentious refinement of sensations.

I transcribe two authorized passages containing their programme. One from *G. Kahn*: "We want to objectivate the subjective, viz., to project the idea instead of subjectivating the objective, which means nature seen through a temperament." The other from a poet: "We want to reach into the essence of nature, the manifestations of which glitter on the surface of things." Baju has a very clear idea of what the Decadent literature should be. "It takes up only what directly interests life," says he. "No description; we suppose all known. Simply a rapid synthesis giving the impressions of the objects. Do not depict, but make the reader to feel." But the most complete exposition of their method is found in the *Traité du Verbe* of René Ghil. It is a sort of rhetoric of Decadentism. Unfortunately for the propagation of its contents, the pamphlet is generally unintelligible. It is written in a new language; the words are still, in parts at least, French words; but the sentences are constructed according to a syntax of their invention. The initiated only can perceive the new light concealed in that obscurity. Nevertheless I shall attempt, in due humility and diffidence, to give a *résumé* of the teaching of the *Traité du Verbe*.

First principle: use the *Symbol*, viz., do not stick close to reality, but extract from it its essence, that which moves us. Instead of making a long description of a beautiful landscape write simply a few words which will convey the total impression. The words need not be connected in any way, provided they give the desired sensation. Hear how well the poet succeeds in conveying the *impression*. This is the translation of the first strophe of one of his poems, called "The Blood at the Temples." I dare say that my translation is no more incoherent and no more obscure than the original.

"Alas! in the rugged dance, where trunks go naked in the manufacture thundering hard, loved rumors, for it we go, then, the rigid steam having you at both fists, O masses to the long flight, no more to waltz the waltz at the high supreme whirling?" A powerful imagination, not fettered by too much hard common sense, might find an interpretation to this poetry.

Second and last principle: use the *Verbal Instrumentation*. The vowels, as the musical instruments, have each their distinctive character. By a clever combination of the vowels and of the consonants, symphonies capable of awakening in us the most varied sensations can be produced. Our author has definitely determined, with an admirable precision, the musical correspondent of each letter. Moreover the vowels have also a color meaning. We reach thus the following table representing what René Ghil calls the *Verbal Instrumentation*. It is at bottom an extravagant system of imitative harmony or rather, of imaginary harmony.

F, l and s, correspond to the long, primitive flutes. L, r, s, z, correspond to the horn, bassoon and hautboy, etc. . . .

O, o, io, oi, give the reds. Ou, ou, iou, go from the black to the russet, etc. . . .

The a, o and u, are to be used to express magnitude, fullness and amplitude. E and i, for the tiny, the sharp, the sorrowful and mourning. O, r, s and x, for the great passion, for impetuosity, roughness, etc. . . .

Everything is clear and simple; and now, when a poet seized by inspiration is prompted to sing, he needs only open Ghil's Table and following it, combine vowels and consonants according to their indicated natural meaning, to express, with all their nuances and subtlety, whatever emotion may oppress his soul.

I cannot refrain from mentioning an attempt made at a Paris theatre to make use of these fanciful discoveries. M. Rounardo and Mme. Famen de Labrély have adapted the "Songs of Songs" of King Solomon to the stage. An actor dressed in yellow comes to the foot-lights and delivers his part, in which, through a happy choice of words, the same vowel, i per instance, recurs constantly. That vowel is supposed to suggest the color yellow (according to Rimbaud's color-alphabet, I think). Other declaimers, attired in garbs of divers colors, deliver speeches in which corresponding vowels dominate. The color-tone of the stage decoration changes to match with the artists and with the part of the piece being recited. Furthermore, to complete the harmony, a symphony in *re* is heard, and perfume of white violet is crushed to powder near the prompter's box while the speech in *i* goes on. The music and the perfume also change with the part recited. This was a very candid and logical attempt. It is not necessary to say that it did not meet with the success expected.

Paul Verlaine is claimed to be the greatest living representative of the *Décadents' School*. Some young literary men have almost

deified him in their frantic admiration. One of them called him the greatest thinker of all times. Physically Verlaine is a somewhat extraordinary being, with a Socratic profile, a forehead immoderately broad, and a skull covered with bumps. His life is full of obscure events: one day, for instance, he disappeared and for ten years remained hidden. Some said that he spent them in prison, others, in a hospital. Recently he published, after a long silence, a little volume of poems, *Wisdom*; but he still lives hidden, nobody knows where, possibly in the rear of some barkeeper's shop.

Les Poèmes Saturniens, *Les Fêtes Galantes*, *Jadis et Naguère*, *Romances sans Paroles* and *Sagesse*, are among his important works. Verlaine is not at all lettered; he uses the words after his own ways without caring for rules. He is sensitive as a child, and contrary to the assertion of his admirers, is a very poor thinker. His poetry expresses only sensations and feelings. It seems as if he was writing for himself alone, and in fact he is sometimes unintelligible. It is astonishing that such a reprobate can express feelings so sweet, so pure, that they seem to proceed from a virgin soul. Can this be artifice or refinement? Neither the one nor the other. This mild Decadent seems to have remained a child through life, or perhaps, after having tasted of all the pleasures of life, he returned to the primitive condition of his soul. *Sagesse* contains the effusions of a repentant sinner who returns to religion. Here the childish turn of mind of the poet shows itself plainly. One cannot conceive of a more ingenuous faith, of a humbler submission. He accepts without a question all mysteries and all dogmas of the Roman Catholic church. I wish I could translate here some of his inspired verses; but since time does not permit, we conclude with the opinion of Anatole France, expressed after the reading of *Sagesse*.

"Thou hast erred, but thou hast confessed thy sins. Thou wast an unfortunate man, but hast never lied. We are Pharisees; thou art the best and the happiest. . . . Paul Verlaine has written the most Christian verses which have appeared in France." But human nature is weak, and I fear that since this very Christian sentiment was uttered, the poet has given occasion to the Critic to repeat the proverb: "The sow that was washed returned to her wallowing in the mire."

Among the prominent Decadents we will further mention: *Stéphane Mallarmé*, professor of English, translator of Edgar Poe. He is, after Verlaine, the most talented of the Symbolists. Unhappily he is a great deal less intelligible than the latter.

Arthur Rimbaud, whose sonnet of the *Voyels* is famous.

Stuart Merrill, one of the few easily understood Symbolists. *Les Gammes* contains charming passages.

LITERARY CRITICS.

We are next to consider a group of writers less extravagant, but more important than the preceding; they may be taken as the representatives of the mass of the Parisian people. They are the famous literary critics, *Lemaître*, *France* and *Sarcey*. Their influence is very great. By their daily articles they make or destroy reputations; they taboo or set in vogue a new book; they mould the taste of the people. They are, par excellence, men of the moment; they speak of the events of the day without an apparent thought for the morrow. They are the people's favorites because devoted to the people's pleasure.

But preliminarily let us cast a glance on the masters and educators of these men, to see from what lineage they have issued.

Among the philosophers we have *Renan* and *Taine*. "We place our title of nobility in this obstinate affirmation (the acknowledgment of duty); we do well, we must hold to it, even against evidence. But there is almost as much chance for the truth of the contrary." You have recognized the bewitching skeptic *Renan*. But you know him and so do you *Taine*, who said somewhere, "The best fruit of science is a stolid resignation, which pacifying and preparing the soul, reduces suffering to a bodily pain."

Among the pure litterateurs of whom our modern novelists and critics received their lessons and often their inspirations, we shall mention *Stendhal*, *Flaubert* and *Balzac*. These men are, all three, strong supporters of the doctrine of art for art's sake. Their criterion of the beautiful is their own sensations, their own taste; the possibility of its corruption does not occur to them; they do not know what corruption means. "As the beautiful and the useful have no point of contact, an artist must refrain from expressing his opinions on the things of this world," says *Flaubert*. His pessimism is as deep as the sky. "It is strange," says he, "with how little faith in happiness I was born. I had, when yet quite young, a complete presentiment of life. It was as a nauseating odor arising through the vent-hole of a kitchen. One need not have eaten of it to know that it causes vomiting." It is the same odor that escapes from *Flaubert's* great novels, and specially from *Madame Bovary*, the creator of the realistic novels. *Flaubert* died in 1880.

Stendhal is a little older (died 1842). A disciple of *Coudillac* and *Helvetius*, he is, as themselves, a sensualist and an ideologue. On the chapter of religion he is ferocious. "The only thing which excuses God," says he rabidly, "is that He does not exist." He is a modern by his sensibility, his analytical mind and his pessimism. He lacks only moderation in his skepticism to be completely of our day. The mellowing influence of a *Renan* had not yet softened that fierce negative dogmatism. His novels have had and have still a powerful influence. The most important of them are *Le Rouge et le Noir*, *La Chartreuse de Parme*, *Le Traité sur l'Amour*.

In *Balzac*, the great author of the *Comédie Humaine*, nearly the same views, the same general dispositions are found.

Jules Lemaitre has been known for only about ten years. A pupil of the *École Normale*, he began his career as professor of rhetoric in provincial cities. In 1884 he abandoned pedagogy and went to Paris to make his fortune with his pen. He became a contributor to *La Revue Bleue* and to the *Figaro*, and a little later was appointed dramatic critic of the *Journal des Débats*. His chief literary studies have been published in five series under the title, *Les Contemporains*, and his dramatic criticisms in a series called *Impressions de Théâtre*.

M. Lemaitre is a kind hearted gentleman, often affectedly flip-pant, sometimes smacking of cynicism; his style is always easy and generally sprightly, picturesque and seasoned with delicate wit. Under his apparent unconcern and good humor, melancholy is discerned. His criticism is purely subjective. He gives his impressions with ingenuousness, regardless of their reflections on himself. As his intellect and his senses are remarkable for their refinement, his impressions are as subtle as they are complex and numerous. He has no dogmatic prejudices in art, nor in anything else; for if, to him, the measure of all things is himself, he knows well that men differ, and is ready to concede that anyone is about as near the truth as himself—if there be any truth. As *M. Lemaitre* never does violence to himself in order to be consistent, and as his supple intelligence sees things from multifarious points of view, it often happens, ac-

cording to his moods and the changes of weather, that he flatly contradicts himself. But what does it matter? According to his subjective mood, is he not just as right in one case as in the other? Occasionally he wittily asks the reader to forget what he has just said, and proceeds to say the contrary.

The faith of our critic is very hard to define. He would willingly repeat these words of his master, ". . . . God, providence, immortality, as many good old words, a little heavy perhaps, to which philosophy will give a more and more refined interpretation."¹

Somewhere half playful, half sadly serious, he makes up a creed. I paraphrase it: "I believe that humanity progresses towards an ideal where justice shall be more perfect, suffering less intense and truth better known. I believe that all men are conjointly responsible, and that we love each other as naturally as we love ourselves. I believe that our advantage and our pleasure are found in loving others, in working for those we love, and, beyond them, for the whole community, amen."²

The following betrays in an interesting way the moral state of literary France. Reviewing a book, Lemaitre says: "It is a beautiful book, and (let not the author take this for a lesser compliment), it is a good book." Our good Lemaitre knows that it is so little the custom to give to the good the priority on the beautiful that he feels it necessary to say that such is his opinion.

Speaking of the remarkable book of Edouard Rod, *Le Sens de la Vie* (The Meaning of Life), and referring to a vigorous page on the noxious effects of dilettanteism, our critic thinks "that it was worth the while to describe that evil, if it were only to make us ashamed of it and to incite in us the desire of shaking it away and of passing from the books to active life," but a little further he adds, "And yet, everything being considered, it is to me extremely difficult to be persuaded that dilettanteism is in itself injurious, and I almost feel disposed to take its defense."

He quotes frequently from the *Imitation of Jesus Christ*. He is acquainted with St. Augustine and makes use of his pious sayings. Often for half a page or more, it seems that you are reading a book of devotion. "To love God," says he, "is to love the human soul, aggrandized with the joy of enlarging it unceasingly, and to measure our own value by that growth." Sometimes about a new drama he shows himself austere and speaks humbly but strongly in the defense of outraged virtue. In all this he is perfectly sincere. It is one part of his double nature which speaks in such occasion; for, like every one of us, he is double and he differs from the common only in a greater instability. He allows his other self to express itself just as freely: "Everything well considered, there are three lives worth living: the life of the man who dominates over the other men, through holiness or through political and military genius (Francis of Assisi and Napoleon); the life of the great poet who gives representations of things more beautiful than the things themselves and just as interesting (Shakespeare and Balzac); and the life of the man who conquers and enslaves all the women he meets on his way (Richelieu and Don Juan). This last destiny is not the least glorious, nor the least to be envied." The reader does not fail to see that it is the destiny which M. Lemaitre would choose for himself, if the choice were in his power—for a part of his sojourn on earth at least, for our delicate critic would not willingly make himself inapt to taste the sweetness of Christianity. Do you ask why? First, because "the religious curiosity, is in our

¹ Ernest Renan.

² *Les Contemporains* (Rod), 5^e Série.

century, one of the most distinguished and one of the best of our sentiments," and secondly, because the gospels have "I do not know what deep charm, mystic and vaguely sensuous." "The modern soul consults all the gods, not to believe in them, . . . but to understand and venerate the dreams which the enigma of life has inspired in our ancestors and the illusions which have alleviated their sufferings." This sounds like Renan.

The best and perhaps the most constant part of M. Lemaitre is his compassion, his pity. I remember having read somewhere a statement of his meaning that he would rather die than willingly cause pain to anyone.

In M. Jules Lemaitre dilettanteism has achieved its wretched work. He has no more character, he is hardly a personality, he is but an intelligence, so subtle and so fluid that it seems ready to fall into thousands of disconnected particles. Of will, habit, inertia, he has little or none.

Anatole France, in addition to literary reviews and critics, collected (the best of them) in five volumes under the title *La Vie Littéraire*, has published a number of valuable novels; *Le Crime de Sylvestre Bonnard*, *Le Livre de mon Ami*, *Balthazar*, are the most important.

The following portrait from his pen shows his moral attitude: "Jules Lemaitre is a very wise and very subtle person, whose happy perversity consists in doubting incessantly. That is the state to which thought has reduced him. . . . Thought is an awful thing . . . M. Lemaitre has no doctrine, but he has a moral philosophy. This philosophy is bitter and sweet, indulgent and cruel and most of all, kind . . . sometimes ascetic and sometimes sensual."

With these two writers, Lemaitre and France, must be associated their colleague, *Francisque Sarcey*, known only by his criticisms. His authority may be judged from the fact that he receives 80,000 francs a year for his weekly chronicle in *Le Temps*.

The first of this trio can be taken as representing the others, so that we shall pass further after the following quotation taken from A. France: "His book (*Mensonges*, a novel of Paul Bourget), in which the inimitable voice of truth is heard, induces despair. Its taste is more bitter than death. It leaves ashes in the mouth. It is why I have gone to the spring of life; it is why I have opened the *Imitation of Jesus Christ* and read the salutary words, 'But we do not want to be saved; we fear, on the contrary, to be deprived from the voluptuous pleasure of going to perdition. The best among us are as Rachel, who did not want to be comforted.' The attitude of the group of men we are studying could not be better expressed.

CHRONICLERS.

The Parisian newspapers are much less voluminous than those of the large cities of the United States. In them the most interesting events of the past day, social and political, the public rumors, gossips, etc., are brought together in a tasteful and sprightly chat called the *Chronicle*. The Chronicle is the most read because, to the large mass of the people, the most interesting part of the paper. The chroniclers, for the best papers, are men of talent, clever to please and enjoying a great popularity and a corresponding influence. This forces them on our attention. We shall say a few words concerning four of them, *Albert Wolff*, *Emile Blavet*, *Henri Fouquier* and *Rocheport*.

M. Wolff and *Blavet* write for the *Figaro*. The first "knows, for the joy and the edification of the people, how to appear in the

same time flippant and serious, boulevardier and moralist, the gentleman who understands all, but who, nevertheless, respects that which must be respected, the gentleman without prejudices of any kind, but, nevertheless, having principles."¹

M. Blavet knows also exactly what the reader wants of him. Lemaitre says that "he has the gift of catching with agility the fugitive traits of the daily comedy, to amuse himself with it and to amuse others. Not a shadow of pretension, a very philosophical good will; at bottom an absolute indifference. This one is a Parisian."

Henri Fouquier writes for the *Gil Blas*. He is more original than the two preceding writers. He is the most distinguished of the Parisian chroniclers. "The mind, the most easy, the most alert, the most skillful, the most ready in all things He reproduces on the run the most recent way of understanding and of seeing which men have found, as if he knew it from all eternity." His fort is woman. That should be the strong point of every Parisian chronicler, for, as one of them said, "Woman is that which fills the greatest room in man's life." You will be able to lay hold of his moralism in the following quotation on love: "Here is the simple fact to which I want to arrive: there is no social morals, there is only a worldly free-masonry, absurd, with cruel and sanguinary rites against which our heart and our reason protest. To seek the law of the world is truly a folly; there is nothing left to do but to submit to it. That free-masonry holds that a young girl who gives herself for a bouquet of roses is lost, while a married woman who gives herself in a caprice or for a bracelet is not on that account dishonored, provided she plays the hypocrite." These, and the like, are the ideas which M. Fouquier develops for the readers of both sexes and of all ages of the great daily *Gil Blas*.

But little variation is perceived as we pass from one to the other of the chroniclers. It is about the same type. It is interesting to notice that the talents which distinguish them are those more naturally belonging to woman: a marvelous gift of receptivity, a great elegance of language, a fine sensibility and a powerful intuition.

As to Henri Rochefort, the publisher of *La Lanterne* (a daily paper), he is a unique being. Lemaitre finds him "a most interesting and, at the same time, most irritating moral case on account of the impossibility of seeing clearly to the bottom of it For the past twenty years his hisses have been heard without interruption on the public place. The empire fell under the noise of his rattle, and since then it has never ceased grinding for a single day. The spirit of Rochefort is uninterrupted, methodical and universal irony. One feels very clearly that the secret source of this raillery is not, as is the case of other great scoffers, the love of the truth, of the just or of the beautiful. His raillery attacks every subject; be it a ridiculous thing or an infamous one, the same methodical sneer disposes of it."

Rochefort is a factor in the political world. He is a deputy to the Legislative Chamber. There he defends what he calls the cause of the people, not that he loves them—that does not appear—but because under that mask of defender of the oppressed he finds the means of best satisfying his hatred and his need of destroying. He was the ally of General Boulanger.

¹ Les Contemporains, Jules Lemaitre.

The bloody period of the French Revolution known by the name "Terror" had such men. A society which not only produces such monsters but tolerates them, not only tolerates them, but honors them with a seat in its Legislative body, a society which supports and applauds to the perverse turpitude of a political newspaper inspired by such madmen, may not be far from anarchy.

The novelist, *Maurice Barrès*, poses as the representative of his generation, and many take him seriously. He is still quite young, but as *Corneille* said :

Chez les âmes bien nées,
La valeur n'attend pas le nombre des années.

His numerous admirers compare him to Descartes and to Spinoza. Indeed he reads Spinoza.

The only reality which he recognizes is the *Ego* and its sensations. There is nothing real under the words truth, justice. The *Moi* is all; there is nothing beyond. *Maurice Barrès* has then a very exalted idea of the *Ego*; it represents the conscience of the race; it is a link in an immortal chain. The *Culture du Moi* is the business to which we should all give ourselves; everything, sensations and emotions, are made to help the realization of our being. Laws are iniquitous, for the only reason of life is the free development of the *Moi* by sensations. Laws are a slavery that dead generations inflict on the present generations; a tyranny of the senseless dead on the living who feel and suffer. To regenerate society, it would be sufficient to put all the *Egos* in liberty by abolition of all the laws.

With ideas so profound and so wise, *M. Barrès* has not had to wait long the honor of representing a part of his country in the Chamber of Deputies.

He developed the ideas here summarily set forth in four books: *Sous l'Oeil des Barbares*, *Un Homme libre*, *L'Ennemi des Lois*, *Le Jardin de Bérénice*.

II. THE TORMENTED.

We arrive, in our survey of modern French literature, to a goodly number of talented men, brought up under the influence of the *Flaubert*, the *Baudelaire*, the *Renan*, the *Taine*, men who more or less earnestly wrestle against the sensualism and the dilettanteism they have inherited and cultivated in their youth, and who aspire to some faith to guide them to the ideal. In their best moments they throw out the cry of deep distress which a journalist recently uttered: "We have no chapel where we can kneel down, no more faith to sustain us, no more God to whom we can address our prayer. Our hearts are empty, our souls are without an ideal and without hope You, who have the good fortune of believing in a Sovereign-ruler, entreat him to reveal himself to us, for we long to suffer and to die for a faith."¹

We have seen these same desires, less warmly felt indeed, in many of the writers we have mentioned, in *Huysman*, who points out faith and religion as the only remedy to the woes of his hero, in *Lemaitre*, and in *France*. We know that in all times some restless people have spent their life seeking in anguish some peace-giving panacea. But the *Mal du siècle* to-day bears a particular stamp. It is deeper and larger, it is no more vague, immatured and unexplained as in the time of *Musset* and of *Lamartine*. It is no

¹ From *Le Christianisme au XIX. siècle*.

more a mere soaring up towards a mystical ideal; the evil is, it seems, fathomed; its remedy is known.

Everywhere, in the daily papers, in the reviews, in the novels, in poetry, even in science and philosophy, traces of a new spirit are found. About two months ago Madame Adam, directress of the *Nouvelle Revue*, invited M. Raoul Pictet, the well-known physicist from Geneva, now professor at the Berlin University, to deliver the inaugural address at the opening of a new lecture hall in Paris. Before a chosen audience of men of letters and of savants, the scientist related his evolution from the materialistic theory of the universe to the spiritualistic conception. The conclusion of the discourse is well worth repeating, coming from such a man: "After having admitted first the notion of ponderable matter, then that of ether, later the notion of actual movement and then that of potential movement, contemporary science is compelled to recognize still another force, a soul-power, in order to satisfactorily understand the observed and observable facts. Experimental physics demonstrates that morality is possible, that duty and free will can be affirmed and, consequently, that men can escape from the mechanical determinism without upsetting the order of the universe."

The French know no more how to poke fun at religion; on the contrary, they wish for it. Even clericalism comes to be looked upon graciously; the famous exclamation of Gambetta, "Clericalism, that is the enemy," is no more heard. A few months ago the minister of public instruction, Bourgeois, against all precedent, appointed an abbot as director of an important Lycée at Nancy, if we mistake not. The press comments were on the whole complimentary. In the schools the questions of religious faith are not discarded *a priori*. The students are ready to listen. The possibility of an intervention quasi-miraculous of the divine is more frequently admitted. The psychological studies have no doubt been a factor in this evolution and especially the mysterious revelation of hypnotism, telepathy and those of spiritualism. Many expect psychology to throw a bridge between positivism and transcendentalism.

Idealistic novels become more numerous. Lately the *Revue des Deux-Mondes* (1890) published a novel entitled "*Ni Dieu ni Maître*" (No God nor Master), by George Duruy, professor at the university, whose theme is the conversion of a physician free thinker. Again here the *Imitation of Jesus Christ* is quoted at length. Noël Blache presented to the readers of the *Nouvelle Revue* (December, 1892) a man of the world, a Parisian boulevardier, and led him to the brim of Christian conversion. In the last chapter the writer places these words in the mouth of his hero: "I feel it now, there is in life something else than race horses, opera women, clubs and the like." He nevertheless continues the same life, for he is unable to shake off his habits. He excuses himself by repeating despondently the old proverb: "*Qui a bu boira*" (He who has drunk, shall drink again).

Two young poets have recently published songs of hope. One of them, Albert Jounet, in two volumes of verses, *L'Etoile Sainte* and *Les Lys Noirs*, gives himself up to religious inspiration. The other, Emile Trolliet, issued a volume of poems with a prelude dedicated to M. de Vogüé, and a piece entitled *Relèvement*, addressed to M. Paul Desjardins.

A group of young men striving for a literary career has lately founded *la Revue Libre*, a small publication of considerable merit. In it can be found striking examples of the transitory moral

stage, characterized by the new-born mysticism in which sensuous love and spiritual love meet and pass into each other.

Pierre Lasserre, a young author, attempts in *la Crise Chrétienne* to analyze and reduce to their just value the new aspirations with which so many of his countrymen are agitated.

But most significant, perhaps, among the numerous signs of a new orientation is the recent choice made by the General Association of the Paris Students for their president. The election carried to that influential position M. Henri Bérenger, a talented young man in sympathy with the neo-Christian movement. In a speech to his fellow-students we find this sentence, "Let us seek to be imbued with the spirit of Christ." A few months ago he gave to the public a novel, *l'Effort*. It is the voice of one who has suffered, warning his brothers and his sisters. The evil of the present resides, in the author's opinion, in the abuse of thought, in the spirit of analysis. He designates it by the term *intellectualisme*, "that perversion of the mind which reduces us to seeking in life only the spectacles of life, and in sentiments only the ideas of sentiments." Intellectualism destroys intuition, that deep primitive impulse of the soul which is the natural spring of action, and in so doing brings about the dryness of soul and the moral inertia of which France is dying. Even love, the deepest and most essential sentiment, the essence of the soul, is extinguished.

The book is written in the form of a novel. A Georges Lauzerte, the personification of intellectualism, is led to a suicide. Contrasted with him is his friend, Jean Darnay, the man who finds in the intuition of his conscience the source of a saving activity. Duty, for M. Bérenger, is one with love, for we know duty only through impulses. So that duty should not be separated from love.

"I give nothing as duties :
What others give as duties, I give as living impulses;
Shall I give the heart's action as duty?"¹

The persons familiar with the spirit of the Paris students of a few years ago, will see in the election of M. H. Bérenger as president of the Students' Association the proof of a wondrous change.

Mark, if you please, that the transformation we have pointed out is not due to the intervention of exterior influences; it is not the fruit of the admonitory appeals of those who have remained untainted by the evils of the period, nor is it due to the teachings of the church. The patient himself has found in his condition the reason of a new course of life. We have here a beautiful case of the normal workings of nature: a society having wandered away from true human life in the process of readjusting itself to the laws of life under the incentive of the moral disturbance consequent upon an anti-natural existence.

If, from the preceding general indications, we pass to the group of men we have more especially designated by the term tormented, we find some poets, *Sully Prudhomme* and *Maurice Bouchor*; at least one dramatist, *Alexandre Dumas, fils*; some novelists, *Paul Bourget* and *Edouard Rod*. Other names might be added, but these men illustrate sufficiently well the various aspects of the *états d'âmes* to which we desire to draw your attention. In these five men, however they may differ in their self-consciousness, or in their manner of manifesting their moral disquiet, at bottom the same conflict, arising from the same aspirations by the same grievous tendencies, is distinctly perceived.

¹ From Walt Whitman, as quoted by M. H. Bérenger.

Sully Prudhomme of the French Academy, author of *les Epreuves*, *les Solitudes*, *les Destinées*, *la Justice*, *le Bonheur*, etc., is a poet-philosopher. He began long ago with philosophical poems, full of enthusiasm and of confidence, in which he preaches action and censures egoistical despair. Since then his voice has grown more harmonious, but also more tormented; he speaks long-felt miseries. The aspirations toward the infinite, the smallness of man before the starry vault of heaven, the anguish of doubt, are the themes to which he constantly recurs. Often he rises on the wings of hope, never on those of faith. In the beautiful stanzas, entitled "*le Vœu*" (the Vow), he exclaims in a burst of passionate compassion for unhappy mortals:

"Du plus avengle instinct je me veux rendre maître,
Hélas! non par vertu, mais par compassion.
Dans l'invisible essaim des condamnés à naître,
Je fais grâce à celui dont je sens l'aiguillon."

In opposition to the theory of art, for art's sake, stands the playwright, *Alexandre Dumas, fils*, also member of the Academy. In his estimate, "All literature which does not have in view the perfectibility, the moralization, the ideal—in a word, the useful, is an unwholesome literature." Every one of his tragedies or comedies is a moral thesis, whose theme is nearly always woman, her moral nature, the rôle she plays and the rôle she should play in society, adultery, that sentimental and elegant prostitution received as a poetical weakness. Society receives the announcement of a new piece of Dumas about as the church-going public of New York receives the information that such a well-known preacher is going to deliver a sermon on the social evil.

Let us find from his writings the ideas on love and on woman of this would-be reformer. The relation of the sexes is for him the social question; all others are subordinate. The world revolves around sexual love. Lewdness, the seeking after voluptuousness is the great, the only great danger of the present. He often agrees with Schopenhauer. I doubt not that the German philosopher is responsible for a part of the utterly diarespectful notions of the academicien concerning woman. "True love is a very rare thing, rare as true genius, as true virtue, as everything that is true. Many are called to it, but few are chosen." Marrying is only making the best of the worse. Marriage, says he in a sally, is a means of transportation, the omnibus which conveys us to the end of our life's journey. The passengers are tossed about, shaken up, vexed and annoyed in many ways, but better suffer the less in the coach than experience the fatigue of walking and running the risk of losing oneself in a roadless country. In the preface to *l'Ami des Femmes*, he draws a very dark portrait of woman. "Woman is a circumscribed being, passive, a disposable instrument in perpetual expectation. She is the only incomplete work which God has allowed man to take up and to finish. She is a riffraff creature. . . . Woman will no more be a wife, a companion, a friend, a slave, a victim of modern society; she is first of all an adversary. . . . There is no family in the civilized world which, at this hour, has not to defend itself against this insurgent woman." On the question of emancipation, Dumas becomes highly entertaining: "Independently of man, woman does not act, she flutters. . . . The emancipation of woman by woman is one of the most exhilarating jollities which ever came to life. It is pure nitrous protoxyde; uncorking suddenly, the flask would set God laughing for eternity." I quote these buffooneries to point out the tone of

this stage-moralist. One of his elements of success will now appear more clearly.

M. Alex. Dumas tells us somewhere how he became a moralist: "One could not have, unless he be crazy, the pretension of achieving all alone a general reform; it is probable that this reform must advance gradually. So that a person willing the good will chose any one of the numerous points at which the symptoms of the quasi universal imbecility manifest itself, and, directing his attention to it, will make it his point of attack." Our playwright chose woman, and took upon himself the mission of reforming society through her. The theatre became his battle-ground, and since that early day he has not ceased writing and writing with a *brío*, an abundance of animal spirit and of wit, truly bewildering.

You have not failed to notice in the last quotation the term "symptoms of quasi universal imbecility." Here, again, the point of view of our moralist is apparent. Do not these words indicate, what is felt through the whole of his work, that his intelligence much more than his conscience, or his heart, is galled by the folly of man? No moral reformer ever subsisted on intellectual sentiments. Nevertheless some have awarded him the title of spiritual director of this century. This shows only how much France needs a spiritual director.

It cannot be doubted that Alex. Dumas is in earnest, but it is not the earnestness of a person conscious of moral evil. There is in him too much blustering, too much fondness for scenic effect, and too little hatred of sin. In truth, he is not enough of a saint to reform anything or any one. The public will enjoy his brilliancy and his daring and often immodest wit, but will not go further. Alex. Dumas is a sort of modern literary Don Quixote.

In the poet Maurice Bouchor, we witness the moral evolution through which so many young Frenchmen pass.

At the early age of 18 (in 1874), Maurice Bouchor published *les Chansons Joyeuses* (the Joyful Songs), a work full of freshness, of unconcern, overflowing with life. They are bacchic songs, love lyrics, poems celebrating the Goddess Nature, and the like. Christianity is cursed, for the young man is a thorough materialist. His Bible is Lucretius' poem; his god is science.

A few years later *les Poèmes de l'Amour et de la Mer* appeared. Sensuous love, strangely entwined with mystic aspirations, gives the tone to this volume.

In the meantime the reckless, unconcerned youth has met with the great problem of life. In the preface to *les Symboles*, he retraces his moral transformation: "Having understood," says he, "that the doctrine in which I saw the truth was devised to debase my mind and to narrow my heart, . . . it became clear to me that if I wanted to increase my intellectual pleasure, nothing, not even virtue, should remain indifferent to me." Under the impulse of this desire he turned towards ideal justice, "but," continues our poet, "the good faith of my master¹ took hold of me, and I became transformed in contact with this sound and robust soul." The facts of moral consciousness had asserted their authority. In search of light he went back to the gospels, and understood better their spirit. The idea of God absorbed all his thoughts. At this time he perceived the limitation of science and its incapacity for satisfying his most imperative and noblest aspirations. Anguishing doubts beset him, which neither religion nor metaphysics was able to silence.

¹ Proudhon.

During this long period of inward struggles, M. Bouchor writes his third book, *L'Aurore* (Dawn), in which he vents in passionate verses, often frightful in the intensity of their anguish, the torments of his soul. The true cause, or at least the chief cause, of his moral condition is revealed in the two first parts of the book, "la Chair (The Flesh)," "la Lutte" (The Struggle). It is not essentially intellectual; it is sensual. The flesh, lust, devours him; in vain his soul, longing for purity, wrestles with his unbridled senses. We dare say that here is the cradle of the greatest part of French pessimism. In order to believe in an ideal world, the idea must triumph in oneself. When the flesh governs the mind, it becomes for it the only reality. Listen to him addressing his mistress:

"Let me die with bliss in the enjoyment of the present,
Eat my heart, drain my veins: again, do it again;
Plunge me whole in an immense joy
That in thy embrace, I may feel my soul die."

And elsewhere:

"I want to clasp thee with shrieks of delight,
And in a caress fit to wake up the dead,
I want to encircle thee around my prey."

A little further:

"Provided I see thee, touch thee, feel thee,
All else is indifferent to me;
The world is naught away from thy arms."

After satiety, regret and black despair seize him:

"Nothing is left me but to wring my hands,
And to cry as a child.—Courage I have lost.
I am whirled, rolled, swept away by the storm
As a dead leaf through the autumn fields."

At another place he exclaims:

"I do not love thee with my brain; it is the beast which adores thee; it is the maddened flesh, and my heart fails to silence my body."

The sorrow is as bitter as the passion is violent.

The last part of the book is calmer and more melancholy. He has fought so hard that he seems to have mastered his lustful desires. The poet thinks he perceives the dawn of a new day, and he pours himself out in mystical effusions, in which the love of the creature, the love of nature and the love of God are strangely blended; he hopes that "that uncertain, misty dawn will be followed by the light of a shining faith." But this hope was not realized, says he, in the preface already cited.

Where did the evolution of the poet stop? Here is, in his own words, the conclusion he reached:

"Religions express symbolically truths which language cannot directly utter, but these truths themselves appeared to me the far-removed images of a reality which I adored without knowing. The most ideal part of every belief was, in my eyes, as a veil which allowed the passage of but a scanty portion of the divine light; it is why, desiring to group in my book the greatest part of these pious reveries, I called it *les Symboles*.¹ . . . After a fruitless search and certain deviations from the religious sentiment, weary of vacillating between contradictory systems, I came to a purely human and moral conclusion."

¹ The name of Maurice Bouchor's last volume of poetry. He attempts in it to resuscitate the spirit of the antique religions.

Paul Bourget.—We feel embarrassed before this very complex nature. To give in a few minutes an adequate idea of one of the most subtle and complicated products of modern French civilization, in his various aspects and in his moral evolution, is no easy task. We beg your indulgence for this insufficient effort.

No man perhaps represents so completely as Paul Bourget the various tendencies, good and bad, and the peculiar psychic states which we have met with in the preceding notes. In him is found the synthesis of the perplexing *états d'âmes* of his generation. I desire to draw your attention specially on the gradual transformation which seems to have removed him from the side of the negatives to the side of the positives.

Twelve years ago Paul Bourget was unknown; today fame has carried his name in every civilized land. We find in him a poet: his first publications, *la Vie Inquiete* (Restless Life), *Edel, les Aveux* (The Confessions), are poetry; a critic: the *Essais de Psychologie Contemporaine*, 2 vols., and *Études et Portraits* have conquered for him a distinct place as a literary critic; a novelist. On his novels rests our author's fame among the great public; to the few who desire to see deeper into the fabric of his soul, the *Essais* and the *Études et Portraits* are Bourget's most interesting works. In them, in some passages of his earlier, and in many of his latter works, the reader finds himself in contact with a strong, disciplined and acute intelligence, with a philosopher seeking relations of cause and effect; while in his poetry, and in a considerable part of his novels, he appears as a mincing, feminine, elegant gentleman, very subtle and very sweet. A female sensibility and a male intelligence, is the first paradox which perplexes the reader. The knowledge of this duality may serve as a key to the understanding of his personality.

Love is his favorite theme, at least in the first part of his career. No one ever unraveled better the mysterious complexity of a feminine heart; the contradictions, the unconsciousness, the instinctiveness of fair humanity were never searched with so much acumen; no woman ever showed so much delicate refinement in the portraying of a heroine's toilet, of her boudoir, or of the furniture of a parlor.

The *Essais de Psychologie Contemporaine* is a collection of about a dozen *essais*, on as many men, whom the author conceives to have been the introducers of new forms of sensations and of thoughts. Notice the word "psychology" in the title. Bourget does not call himself a critic, but a psychologist, and this correctly, for he does not discuss talents or artistic theories; he analyzes minds. He does not depict and criticise; he attempts to set forth the internal processes which determine action, to unfold a soul, and to show its influence. The form, the exterior, draws his attention only in so far as it reveals the inner man. By the use he made of that psychological method, Paul Bourget became the leader of a new literary school called *l'école psychologue*. His purpose in these *Essais* is to show how the literature of to-day influences and moulds the ideas of the men of tomorrow. "My ambition," says he, in the preface, "has been to draw up some notes that will be of some use to the historian of the moral life during the second half of the nineteenth century." The author's point of view is subjective. He chooses the men who have been his initiators, and he sets forth mainly those special characteristics of each which have influenced him. But in thus studying those men from the point of view of his own experience, he really stands as the representative of a large portion of the cultured French of the present generation.

Since his endeavor in the *Essais* is to trace the influence of the literature of the middle of the century on the men of today, Bourget must take in consideration the laws of psychic life underlying the principles of ethics. I do not think it would be correct to represent him as concerned with morality because it is a question involved in the studies contained in the *Essais*, but rather the *Essais* owe their existence to his deep and constant sensibility to good and evil. I call your attention to this fact as one of the fundamental elements of Paul Bourget's personality. None of his books has yielded his deepest meaning if this be neglected in its interpretation. His novels are dramas of the conscience. His heroes wrestle consciously or unconsciously with the moral instincts. When A. France goes to the Imitation of Jesus Christ after reading *Mensonges*, it is to ease the intense sadness caused in him by the conflict of sense and conscience as depicted by the novelist. Exaggerating a little, one could say that the groans of a soul subjugated by the sensuous passions are heard arising from every page. In this Bourget is again a psychologist, for how can we conceive of a true psychologist who is not a moralist? Are not moral questions questions of life and death?

L'Irréparable is the story of a young girl who dies from shame and remorse after a pollution.

Cruelle Enigme sets forth the weakness of the spirit in conflict with the flesh; that is the cruel enigma.

The theme of *Crime d'Amour* (Love Crime) is the expiation and purification through moral sufferings, followed by reconciliation.

Mensonges relates the fatal *desillusion* of a young poet suddenly thrown, by his first success, into a luxurious and elegant society. It is the tragic conflict of the ideal with the reality.

These novels produce a painful and a depressing effect. A sensuous thrill and a longing for a spiritual ideal, simultaneously awakened in the reader, clash together and create a most painful emotional state. We conceive the author to be in the moral condition which his novels induce. Without ceasing to surrender himself again and again to the greedy claims of his refined senses, he cannot free himself from the besetting presence of his higher self. The ideal follows him. Hence the duality of his novels; hence their sadness and their pathos. The complaint of Bourget, as of all these tormented men; the complaint of *des Esseintes* of Lemaitre, of Rod, of Bouchor, of Sully Prudhomme, etc., is more or less distinctly that of St. Paul. "For the good that I would, I do not, but the evil which I would not, that I do. O, wretched man that I am! who shall deliver me from the body of this death?"

Another fact worthy of attention is the little share that pure intellect has in Bourget's novels. Their author appears to move in the world of the feelings; he is a psychologist of the heart rather than of the head. His instrument of comprehension is *sympathy*. When he dissects an action, it is by means of the logic of the feelings. Facts exist for him only in their emotional concomitants. This is, indeed, one of the striking generalizations resulting from a study of modern French litterateurs: nothing interests them, nothing moves them, nothing is worth noticing, nothing exists for them save objects of feeling. Shall we not see in this phenomenon presented by an old sceptical civilization unfettered by convention or by tradition, the demonstration of the impotency of pure thought as a direct spring of action, and the fundamental importance of the feelings? The wonderful subtlety, the remarkable intelligence of the men we have reviewed, has its basis in an exquisitely delicate nervous system, reacting emotionally to facts which leave the vulgar unmoved.

In his first phase, Bourget is a negative, a sceptic, a dilettante, a pessimist. I quote from the *Essais*: "Only a prejudice in which reappear the antique doctrine of final cause and the belief in a definite purpose in the universe, can induce us to regard as natural and wholesome the amours of Daphne and Chloe in the dale, and as artificial and unwholesome the amours of a Baudelaire in the boudoir he describes." He admits the decaying state of France, but adds: "If the citizens of a decadence are inferior as workers for the grandeur of a country, are they not very superior as artists of the interior of the soul?" Notice, if you please, that this is said in a chapter on Baudelaire, with direct reference to that poet. A superior being is for him some one who discovers some new mode of thinking or of feeling. Ch. Baudelaire and E. Renan are both superior beings, because "by digging deep into their heart, they have invented two ways, until then unknown, of practicing, the first, debauchery, the second, dilettanteism. They have told their new dreams of the voluptuousness of the flesh and of the spirit in very bold pages, which have awakened in analogous and less personal souls tempting curiosities." There is here absolutely no thought of anything beyond art.

In the *Nouveaux Essais de Psychologie*, published later, moral scepticism seems to have lost ground. The mysticism already visible in some parts of his first studies is here more accentuated. He seeks a remedy to the "immortal nostalgia of the heart," and he perceives that the avowal of the heart's cravings is an open door on mysticisms, that it is the admission that there are intuitive truths which science cannot give us.

We have alluded two or three times to an evolution in the life of Paul Bourget. *Le Disciple* is perhaps the first clear indication of it. This novel, generally held to be the master-piece of Bourget, is the story of a young man who is led to perpetrate a crime by the logical deductions he made from the teachings of the determinist philosopher, Adrien Sixte. Its thesis is the responsibility of the teacher for the act of the pupil. It is a strong and pathetic appeal to the hoard of writers of all kinds who have so large a share in the education of youth. The author appears to have finally come to the full realizations of the vicious influence that such men as Renan, Taine, Baudelaire, Stendhal, etc., whom he revered and admired, have exercised on him, and, seized by the idea of the danger to which the young men, his brothers, are exposed, he throws out a passionate cry of warning. Listen to him addressing, in the preface, the young men to whom he dedicates his book. After having described two types of men, the one who at 25 years of age is a "calculating machine at the service of a machine for pleasure," the other very much alike to the author himself as he appears in his first works, he proceeds as follows: "Be neither one nor the other of these young men, thou, my brother! Let neither the pride of life nor the pride of intelligence make of you a cynic, a juggler with ideas! In our time of troubled conscience and of contradictory doctrines, cling to the word of Christ as to the saving branch; 'the tree must be judged by its fruit.' There is a reality of which you cannot doubt, for you possess it, you feel it, it is part of your life, it is your soul. Among the ideas which assail you, there are some which decrease the soul's power to love and to will. Hold for certain that those ideas are wrong in some particular, however subtle they may appear to you, however talented may be those of whom you receive them. Exalt in you these two great virtues, these two energies, outside of which there is nothing save present withering and final agony, *Love and Will*."

Unhappily the novel betrays the fact that the inspiring sentiments of the preface are, in part, only heart's desires, and have not yet become fast rooted in a character. Many a passage contained in it will not serve to exalt in the reader the two virtues without which there is but withering and ultimate death.

La Terre Promise (The Promised Land), published at the end of the past year, may be regarded as the first work of the second phase in the author's life. The dilettante palled with the dull realities of life; the sensualist moaning under the slavery of his passions; the sceptic playing indifference, has become a man of duty. He who delighted in the subtleties of the intellect, condemns now the refinements of elegance and the refinements of intelligence, as being incompatible with virtue. "Intelligence is negative; that is the brutal fact of which we must loyally acknowledge the certitude."

It might perhaps be said that the ethical worth of a man is measured by his views and habits respecting sexual relations, for sexual life is still more truly the centre of the moral than of the physical. Bourget, up to *la Terre Promise*, proceeded on the principle tacitly admitted by a large part of French society, that when a woman does not find in marriage the legitimate satisfaction of her heart, she is excusable if she gives herself to a man worthy of herself, in order to save from atrophy her best self. In that novel, Bourget breaks with this current morale. He perceives that he has been juggling on the brim of a precipice, and earnestly attempts to show the unavoidable degrading influence of all adultery, and the duties that such relations involve to the woman and to the possible offspring. *La Terre Promise* is the drama of paternity in adultery.

The skeleton of the novel is very simple. Ten years after having through ungrounded jealousy separated from his mistress, a married woman, Francis Nayrac meets a young girl of angelic purity, with whom he falls passionately in love. He has at last found the ideal for which he was longing. His suit is accepted, and they pass together with the mother of Henrietta, Madame Scilly, delicious days in a Sicilian residence. Not long before the date fixed for the marriage, chance brings his old mistress with a young child into his neighborhood. Through a striking resemblance to his own sister, Francis is convinced that the child is his. His bride discovers the secret, and an irrevocable separation follows. Soon after the mother of the child dies from consumption, and as Francis, all alone on the landing, watches the steamer which carries away his child to her mother's relative, it seems to him that at the extreme line of the horizon, colored by the rays of the setting sun, a luminous shore appeared as a land of light toward which the boat directed its course. It became for him the symbol of the new shore, of that other Promised Land toward which he was resolved to direct his walk. "The heroic sacrifice of the loving Henrietta had not been lost. The man of desire, of selfish emotion, the one who lived only to feel, even in disregard of the misery of others, was finishing to die off in him. . . . He had the certitude that if she remained separated from him by her vow, she had at least rendered him the esteem of which he felt worthy now that he had become a man of responsibility and of conscience." His sufferings he accepts as a deserved punishment, and finds consolation in the words of Christ, "Take up my cross and follow me."

From first to last page the book breathes a spirit of sincerity and purity, a moral earnestness, in strong contrast with the dilettantism of the preceding novels.

The psychic traits we have noticed in the preceding studies might perhaps be summed up under the following heads:—

(1) The thirst for sensations; voluptuousness.—The demands of an over-excited nervous system can no more be controlled by moral dictates. Sensitiveness to the beautiful characteristic of the French, facilitates the abnormal development of sensuousness, for, as Kraft Ebbing remarks, "In sensual love is gained that warmth of fancy without which a true creation of art is impossible." The normal equilibrium between sensual love and ideal love is broken.

(2) The spirit of analysis.—It is the instrument of the seeker after sensation. Such a person derives his enjoyment from the contemplation of his emotional and sensational states, and consequently is led to analyze his psychic states, in order to delight in their pleasurable contents. Moreover, the conflict which such an attitude induces in a being not utterly deprived of moral sense, draws the attention of the subject on himself and becomes an additional incentive to introspection.

(3) The absence of faith in the moral principles.—The facts of conscience, at all times present with the well-balanced man, have been crowded below the threshold of consciousness by sensuous and intellectual presentations. Dilettanteism is one of the fruits of this psychic state; it is the child of a non-moral being.

(4) Pessimism.—It cannot fail to accompany the absence of faith in a destiny. Revealed religion is an illusion; the promises of science are illusions; even free-will is an illusion; man is but a piece of machinery in an immense insensible mechanism, working we cannot know why; good and evil are empty words. Pessimism is, moreover, increased by the diminution of life consequent upon this depressing nihilism and upon sensual excesses.

(5) Painful longings for a vague ideal; mysticism and moral inertia.—Along with the preceding characteristics we find very often aspirations towards purity. This soaring upwards is in its first stage a religious mysticism uniting sensual with ideal love. This mysticism performs the function of a bridge between the "flesh" and the "spirit." It is highly interesting as showing the close connection existing between sexual and religious feelings. In the shifting emotional condition of the men in whom we have noticed mysticism, those two feelings supersede each other; although differing in quality, they appear to be inversely proportional quantities, so that we are led to think of them as different manifestations of a unique energy. A dismal moral inertia accompanies these first desires; the abuse in the contemplation of feelings has destroyed the power of action.

We might be accused by some of having drawn a picture of France darker than reality. If we had left the sphere of literature to go lower, among the books and publications of all sorts which have no claim to literary merit, to the "feuilletons" of many daily papers, to such reviews as *la Vie Populaire*, to the novels of Richebourg, du Boisgobey, Xavier de Montépin, Paul de Koch, Paul Féval, Gaboriau, La Comtesse Dash and others,—the moral rottenness of a portion of French society would have appeared much greater. It would, nevertheless, be a glaring mistake to suppose that the writers whose characters we have tried to delineate represent the totality of the French people. The comparisons sometimes

drawn between the Paris of to-day and the Rome of the emperors is the work of detractors or of misinformed persons. The vitality shown in the wonderfully rapid recovery from the defeat of 1870 would be sufficient proof of the falsity of such intimations. The current of life to which we have drawn your attention is very noisy, it is strong, and at one time threatened to carry away the mass of the nation; but there is by its side an enormous extent of dormant waters and also a counter-current steadily enlarging.

Before arriving at the end of our task, we have still to set before you the nature and extent of this counter-current, commonly named *Neo-Christianisme*. That shall be the object of our third lecture. But previously let us ascertain the cause and the accelerating circumstances of this movement.

Its true cause is found, it seems to us, in the moral and religious nature of man: an abnormal and consequently painful psychic state, as the one at the base of French pessimism, tends constantly, in virtue of its unnaturalness, to pass over into another psychic state, more in harmony with the fundamental needs of human nature.

A number of exterior circumstances have, during the past twenty years, come to the help of nature in stimulating the moral and religious aspirations. Among these accelerating circumstances we place the defeat of 1870, the Paris Exposition in 1889, Russian literature, and the influence of French Switzerland.

The Defeat of 1870.—We begin with the first in date and the first in importance. The humiliated nation had too much spirit to lose heart. Vengeance should be taken. The wiser of the nation drew moral lessons from the unhappy war. Moralists and ardent patriots saw in the defeat the sign of degeneracy; they united to point out the root of the evil, and abroad went the idea that the nation had received a deserved punishment for its moral weaknesses. This idea accepted—and it was accepted more or less openly by many an influential man—you conceive what powerful impetus the movement of national regeneration received. Thoughtful men turned to a thorough and conscientious study of the causes of the reverse; comparisons were made between France and Germany, and out of the flood of tempestuous sentiments arose the steadfast purpose of achieving the salvation of the nation by what I shall term the moral reform. It took various names and various forms, but at bottom it is a moral reform, since the building up of men was the aim. The most important of them is the great reform of national education, concerning which we shall say a few words later; at present we simply desire to have you realize that the renovation has for one of its most potent elements the national sentiment aroused by the defeat of 1870. The *idée fixe* of the foremost statesmen and educators is the replacing of France on a footing of equality with its great neighbor and enemy, in order to be equal to any emergency and ultimately to efface the black record of 1870. This same idea lurks even around the basal notions of the less exclusively patriotic, the most universal of the leaders of the neo-Christian movement, M. Paul Desjardins. Listen to the impassioned words of the noble Ernest Lavièze, one of the most influential reformers of the national system of education, speaking to an assembly of students: "If I had not for our flag the cult of a pagan for his idol, which claims incense and at certain times hecatombs; if my heart was to forget our national sorrow, truly, I would no more know who I am and what I am doing in this world. I would have lost the principal reason for living." In the preface to *Etudes and Etudiants*, a collection of

speeches by Ernest Lavisse, we find these words: "They feel (the students) that our solicitude for them extends beyond the immediate object of their studies; that our relations are not only those of master to pupils; that through our lips a generation which has paid by public woes for its insufficiency and its faults, speaks to a generation that it desires to make better than itself in order to give to it at least an additional chance to be happy." Sometimes the wounded patriot forgets his moderation and such words as the following, uttered at a meeting of the Students' Association, carry the spur of vengeance into the hearts of his young auditors: "We, whose youth ended as the great national mourning began . . . we would not die before having seen our France restored and avenged." You perceive the spirit. The life of M. Lavisse is completely devoted to the reconstruction of the nation through education. Raoul Frary, another educator, is animated by the same patriotic idea. In his book, *La Question du Grec et du Latin*, he writes: "The invasion of 1870 compelled us to confess an inferiority of which we had to seek the origin. The example of our victors themselves was an invitation to base on a better education of our youth the hope of retaliation, or the security of the diminished territory."

The well-known philosopher, Alfred Fouillée, begins his interesting work on *L'Enseignement au point de vue National* with these words: "A league for the *renaissance physique* has been founded in France and everybody feels that we no less need to unite to give birth to an intellectual and moral renaissance." Notice, if you please, the title of the book; since 1870, there is in France no other standpoint in education than the national standpoint.

When the minister of public instruction, Bourgeois, sends out instructions warning teachers to keep from their pupils all books with sceptical tendencies, all books that could tend to diminish activity, it is not that he has found a satisfactory basis for truth, but only that he realizes the dissolving action of doubt, and fears its consequences for the nation.

Let me remark here that the Papacy and the French patriots work here in the same direction, although their aim is not the same. It may well be that in order to achieve the end it has in view, the civil power will modify its attitude towards the church and welcome its coöperation.

It is the same patriotic feeling which has instigated the uplifting efforts of Melchior de Vogue. Read his beautiful articles published in the *Revue des Deux Mondes*, during the Paris Exhibition, under the title *A Travers l'Exposition*, and you will understand that here again the patriot makes the moralist.

This will suffice to show how powerful has been, and still is, the national sentiment aroused by the unhappy Franco-Prussian war in furthering moral reforms. It is, in truth, a morality of a low standard, that morality which is imposed as a necessary condition of the *revanche*; it is the morality of the athlete in training, who, in order to augment his chances of victory, curbs his bad passions. But it is, nevertheless, an element of progress to which due weight must be given; we must not forget that one of the strongest pillars supporting societies is made up of those blind and generally accounted unworthy passions, which could be designated as the passions of the struggle for life, rivalry, vanity and selfish ambition.

The very interesting question of the influence of the collective body, of the national instinct, on the individual finds valuable illustrations in the facts we have just laid before you. Allow me to digress from my subject for an instant. We distinguish two

sets of reasons why a national disaster should often appeal more strongly to the individual than his own moral abasement. On the one hand, the individual cannot be fully conscious of his own degradation, for that which in him judges, his conscience, is precisely that which changes. But when the body politic, when the fatherland is suddenly crushed down, the citizen remains able to perceive in that objective fact a sign of degeneration. Moreover, while in the case of personal looseness of life, our will is hampered in its efforts at reform by the alluring sensual pleasures attached to many evil deeds, no such counteracting influence fetters our activity when the nation and not ourselves is the victim. The powerful and deeply ingrained sentiment of rivalry is also strongly awakened by a national reverse. There is an enemy before us; it is not a mere intangible passion; it is a collection of men like us; where is the valorous man whose powers of life are not quickened by the thought of a human adversary?

On the other hand, the altruistic instincts receive a strong impetus by a national danger. It is no more a question regarding ourselves only, or, perchance, our family, but it is a menace to the community with which we are bound by all sorts of ties, and further, to the whole nation, whose survival we recognize to be of more importance than our own, for we cannot escape the influence of the number.

Russian Literature.—About 1884, the sympathetic and eloquent pen of M. de Vogué introduced the Russian novelists to the French public in a series of articles published in the *Revue des Deux Mondes*. A few of their books were translated and met with a prodigious success. Within a few years Russian literature invaded, we might say conquered, France. It was a craze. Gogol, Tourguenef, Dowtoiesky, Tolstoi, became the subject of gossip for society ladies, and of discussions for the men of letters. There is something almost mysterious in that subjugation of highly cultured France by the half barbarous country of the Czars.

What were those bewitching ideas coming from dark Russia? What could come from sensitive men in close touch with modern knowledge and western civilization, witnessing, as fellow-countrymen, the social barbarity and the wide physical and moral misery of their kinsmen; what could be in the breast of such men but sadness, revolt against civil power,—perhaps against divine power,—pity and despair or, perchance, hope?

Russian literature is pervaded by a strain of intense sadness and a deep pity. But beyond the sorrows of human existence, the writers see hope, for, however radical the intellectual scepticism of some of them may be, conscience and duty remain undethroned. Their books throb with moral earnestness, and whatever pessimistic expressions may be found in their pages, the reader leaves them with the impression that man is not a mere waif tossed nowhere by the billows of life, but that he is rolled about in a world of sorrow by his own passions. Sin is the cause of the sufferings of man.

Russian novelists have captivated the French, because they treat of the life and death problem, which, unable to solve, the French appeared ready to abandon: the meaning of life, because they bring to its study the sympathy of a young healthy person, instead of the hopeless sorrow of a decadence; because they have a true pity, or better, a Christian charity for the sufferers and the fallen; because they reveal a world of faith and of action.

Sincere emotion, unselfish interest in others was blunted in France; the strong, vibrating voice of the Russians has vivified the

source of human sympathy and of brotherly love. Compassion and pity are the two virtues which have penetrated deepest. It was, perhaps, the best gift that could be made to France in a time of cold indifference and of monstrous development of egoistical individualism.

The Paris Exhibition in 1889 must be counted as one of the events which greatly stimulated the various reforms. The French never lost confidence in themselves, but the proof of vitality, the vindication of the immense resources of the nation, of the industry, skill and intelligence of the people which the great exhibition furnished, filled every French man with a new hope and a new energy. In 1889 France resumed, in its own opinion, its former place among the great powers of Europe. The exhibition was the first visible step towards *la revanche*; it became the voucher of a new era.

French Switzerland.—The exchange of thoughts between French Switzerland and France is considerable, for the language is the same in the two nations and they are contiguous. The Suisse Romande unites many of the traits of the Germanic to many of those of the Latin race. The French Swiss is less brilliant, but perhaps more reliable, steadier; less enthusiastic, but more persistent; coarser in his sensations, less artistic, but morally stronger than the French. Thanks, in part to its vital Protestantism, the morals of Switzerland are comparatively pure and simple. Its literature reflects the national character, and exercises in France an influence often disregarded by its great neighbor out of a sentiment of ungenerous pride.

The philosopher who is looked upon as the philosopher of the neo-Christian movement now in progress, *Charles Secrétan*, is a Swiss professor. Paul Desjardins could aptly be called his pupil. Long practically ignored in France, he has come into prominence with the religious awakening. At the beginning of the year, Desjardins and his friends induced him to come to Paris and meet the French philosophers in public discussions in the interest of Christian spiritualism. The students seized upon the occasion to manifest the honor in which they hold the venerable professor of Lausanne University. We shall have a few additional words to say on Charles Secrétan at a later time.

Brunetière, the first French critic of the day, recently elected member of the French Academy, is one of the very few litterateurs of mark who hold to a positive criterion of truth. In an article on *Alexandre Vinet*, the Swiss critic and theologian of the middle of this century, he declares that he owes to no historian of literature so much as to the author of the *Etudes sur Pascal*. If Brunetière, in opposition to nearly all literary France, approves of Vinet putting the ethical question to the front in a history of literature, who shall say that he does not owe that high notion to Vinet himself, with whom the moral value of ideas makes the value of literature? The same authority, speaking of the *Etudes sur Pascal*, says: "It is the most exact, the most penetrating and the deepest work ever written on the author of the *Pensées*. When Sainte Beuve was composing his masterly history of Port Royal, he went to Lausanne and spent there a year in close intellectual companionship with Vinet, whom he venerated as a master.

We need not revert here to Edouard Rod, whose spirit we have tried to set forth when speaking of the Tormented, nor do we need to dwell longer on this topic. What precedes will suffice to indicate that the influence of French Switzerland is in the direction of the moral and religious revival going on in France.

Transformation in the Roman Catholic Church.—We cannot pass on to the neo-Christian movement without taking cognizance of the present attitude of the Roman Catholic Church with respect to France. Under the far-seeing leadership of Pope Leo XIII., the church is undergoing an epoch-making transformation, aiming at a better adaptation to the social and scientific progress of the world.

Among the many history-making acts of Leo XIII., there are two of special interest to us: the return to the philosophy of Saint Thomas Aquinas, and the acknowledgment of the Republic. In the encyclical letter, *Æterni Patris* (1879), the Pope recommended the study of Saint Thomas as the best philosophy for Catholicism. A little later an academy was founded at Rome to set the example. Not long ago, a baccalaureate in scholastic philosophy was established at the Catholic Institute of Paris. Nearly every week sees new books on Saint Thomas. At the order and expense of the Pope, a new complete edition of his works is being issued. Discussions and comments on his doctrines fill the Catholic papers, and this not only in France, but still more so in Germany, in Belgium and in the United States. Since Leo uttered this encomium—"Reason carried on the wings of Saint Thomas to the pinnacle of human nature can hardly rise higher"—the name of Saint Thomas is on the lips of all the faithful. "Thus, says Saint Thomas," is now the watchword in the Roman Church.

What is the significance of this move to the peripatetic philosophy? Two motives are attributed to Leo XIII.: The opposition of the church to the republican form of government had become dangerous to its existence in France, and was a serious impediment to its progress in the United States. The doctrine of Saint Thomas allows of all sorts of governments, according to circumstances, on the principle of the natural rights of man. So that the acceptance of his philosophy rendered legitimate the step which the Sovereign Pontiff contemplated taking, the adhesion to the French republic. The other motive is to make possible a Roman Catholic unanimity in philosophy, for if the Catholics have been united on the questions of dogma, their philosophical tenets have greatly varied. The political successes of the Catholic party in Belgium and in Germany are due, in part at least, to the spirit of unity produced by the new papal policy.

Another very significant sign of the new life which is being instilled in the church by the powerful breath of the venerable Leo XIII. are the Catholic congresses of scientists. "Science is our great enemy; then let us make it an ally by developing among us the scientific spirit and scientific knowledge," thus spoke certain well-advised Romanists. The first congress, a very small assembly of men of little notoriety, met in 1888; the second was held in 1891, and proved completely successful; a third one is announced for 1894. From the first the warm sympathy and active support of the Pope assured the success of this remarkable association. The Holy Catholic Church enticing young men to seek in the field of science the renovation of its apologetics! It is, indeed, a wide departure from its traditional policy. One can well ask whether science and scholastic philosophy, united by the paternal hand of Rome, will live together peaceably. These congresses of scientists have already produced such fruits that one of the redactors of the *Revue Philosophique* has said: "We shall soon have to reckon with the Catholics in the religious, social and pedagogical questions. France will soon know, as already Germany and Belgium do, how much vitality the return to Thomism has infused into the Roman Catholic Church."

In *résumé*, it appears that the Roman Church is undergoing a transformation in order to adapt itself to the changed condition of society. It had remained too far behind modern civilization; now the wise Leo XIII. is making a powerful effort to regain contact with the modern world. How far will this liberal tendency go? Will it, under the influence of such men as Desjardins and de Vogüé, extend to the essential reforms, which alone will permit of its reaping the fruits of the spiritual awakening? If the Catholic Church is to draw to its bosom the French youth, the reforms undertaken are only precursors to much deeper transformations. But we shall have occasion to recur to this point when speaking of M. Desjardins.

III. THE NEO-CHRISTIAN MOVEMENT.

Ernest Lavisse, Melchior de Vogüé and Paul Desjardins, around whom the forces of moral reconstruction centre, differ widely from each other, although generally mentioned together. All three have at heart the moral renovation of France, but their conception of the evil, their attitude before the problem, and the solution they propose, separate them sharply from each other.

Their field of direct activity is the cultivated youth and especially the Paris' students. Lavisse and Desjardins are both professors at the Sorbonne, and, although not in official connection with the students, de Vogüé has become by his writings their admired master. All three are literary men; Desjardins is professor of rhetoric; Lavisse occupies the chair of history, and de Vogüé is one of the most brilliant writers of our time. The two last named are members of the French Academy. We note the exceptional fact that this moral and spiritual awakening starts from the higher sphere of intellectual and social life, while heretofore the religious conquests have generally been made with the help of ignorance, or at least independently of learning. We welcome this fact as a sign of true progress. Christ's message was primarily addressed to the poor and the lowly; it finds more ready acceptance among those whom neither wealth nor social position nor intellectual ambition incites to unrighteous living. Today the learned and the great become the prophets of the revival. It is the vindication of intelligence, it is the glorification of the democratic spirit, it is also a sign of the recognition that the evil lies in great part in a false exercise of the mental faculties.

We shall endeavor to represent to you the spirit and the activity of these three persons.

ERNEST LAVISSE.

Ernest Lavisse wields the greatest influence over the university students. He has gained their confidence and their admiration; he is the beloved master to whose enthusiastic and authoritative voice they intently listen. Far from confining himself to his historical teachings, his large mind and his patriotic heart are chiefly concerned with the reform of education, through which it is hoped France will regain the preponderant position lost in 1870. According to his belief, universities create nations. Lavisse is not moved, as is Desjardins, by the degradation of the individual. We have had occasion while speaking of the circumstances which stimulated the moral movement to quote a few passages from our historian. From them you have gathered that the moral evil appeals to him through the degeneracy of the nation. If he seeks with all the might of his powerful nature to rebuild manhood, it is not out

of hatred for sin, nor chiefly out of love for his fellow-men, but to the glory of his beloved fatherland. Before him stands constantly the spectre of France vanquished and threatened with complete destruction by the foe of the east. Under the spur of this vision he buckles on his armor and calls upon the young men to prepare for the coming struggle. The following passage from a speech to the students of the Faculté des Lettres reveals why Ernest Lavisse is a historian, and at the same time why he is one of the most ardent advocates of the reform of national education: "I follow an intimate and very urgent sentiment when I insist on the necessity of a serious and sustained effort in the study of our own history. This sentiment is that the University of France has certain duties to fulfill towards your country, duties resting especially on the professors of history. My conscience would reproach me if I did not represent to you that in a time when the rivalry among the nations is violent and will become ferocious, every people must richly nurture all the sources of its national energy. . . . To-day the most active nations seek in their origins the demonstration of the rationale of their existence, and seek in the past the guarantee of their future. . . . Then, either we must absolutely deny the power of ideas and of sentiments on the souls, and consequently on the activity of men, or we must admit that the national energy is increased when a people is given the consciousness of its value, and a feeling of pride in its history; when the enlightened men have a clear notion of the genius of their country and of the rôle it has played in the world, and when a sentiment of pity towards the fatherland descends from the high regions of historical researches down to the deep stratum of the people."

The written work of Lavisse is not considerable. He exercises his influence and accomplishes his purpose through daily contact with the students, through speeches and allocutions delivered in their assemblies, at banquets, at the opening of the sessions of the Sorbonne, and on every other favorable occasion. Some of his speeches and discourses have been collected in two volumes, *Etudes et Etudiants* and *Questions d'Enseignement National*. He published in addition two historical works, *Vue Générale de l'Histoire politique de l'Europe* and *Trois Empereurs d'Allemagne*. Often he addresses his inspiring words to the teachers and the professors, laying on them the responsible duty of forming citizens by whom France's future grandeur may be edified: "We have to-day many things to say to our youth, things which are not in the curricula nor in the examinations. We must not make an abuse of those confidences, of these advices, of those high moralizings, but we must not neglect that part of our duty. It is a very great error to leave the essential untold under the pretext that it is understood."¹ Similar words are uttered by other eminent professors. In his book on *L'Education dans l'University*, M. H. Marion writes: "Do not fear to go down from your chairs among your students; do not fear, between two explanations of Latin texts, between two corrections of exercises, to warn, to direct, the consciences of those over whom you are the guardians, and who expect, who demand, from you something else than mere notions and classification of knowledge."

One of the signs of the new life pervading the French students in which Lavisse lays great hopes and great pride is the *Students' Association*. Prior to 1894, the students of the different parts of the

¹ From the preface to *Etudes et Etudiants*.

University of France had no relations with each other. At that date the Paris association was authorized. In 1889 it numbered 1,550 active members, with an endowment fund of 13,000 francs, and about as much available money. Since then the society has greatly increased in number and activity. The purpose of the association is simply the concentration of the French youth, the union of the various schools in order to create an *esprit de corps*, to stimulate and to help each other. It is in his relation to the association that the large-hearted sympathy of Lavissee and his warm patriotism best display themselves. No occasion is lost by him to fraternize with the students, to rejoice or to mourn with them, to warn or to praise them, and above all, to breathe into them the burning patriotic spirit which is his life. He comes to the tomb of one of their number to weep with them and to comfort them. Addressing himself to the dead, he says: "My dear Delambre, as to me I was not satisfied to love you. Deep in my heart I felt for you sentiments of gratitude because you possessed the qualities and the virtues which we wish for the French youth; we whose youth ended as the great mourning began, we would not die before having seen our France restored and avenged. Your name remains associated with that sacred hope."

The following citation gives a good idea of the tone of Lavissee's patriotic speeches, and indicates the importance attached to the Students' Association. It is taken from an eloquent address to the students after the return of the association's delegates from the festival of the University of Bologna in 1887, at which the principal universities of every civilized nation were represented: "I feel still the charm and the gracefulness of the festivals of hospitable Bologna. But above all else I admired there two things, the enthusiastic salute of our Italian comrades to our flag, and your serious and proud manner of holding that flag. . . . The return from Bologna has been the occasion for an ovation, for the public begin to understand that the students are able to do a national work. You have at last given to French youths their legitimate place. They were an anonymous crowd, disseminated in the faculties and in the schools, knowing not each other. You have made of them a body, noble among all, a person in the nation. Through you we know what *les jeunes* are. Formerly we could have believed that *les jeunes* were a few original young men, mannerists, dilettante, or worse than that, men who carry with them the disgust of life as a new fad. *Les jeunes* are you, you whom we have seen vibrate at the sound of certain utterances, quiver with certain emotions; whom we have heard express by acclamations addressed to the chief of the state the cult you profess for liberty, for honor and for your country. You are *les jeunes*, you, my friends, you who sing, you who laugh, you who work joyfully. You possess activity, valor, common sense, gaiety, humor, enthusiasm; you possess the soul, the whole soul of France. I am among those to whom you have more than once during these last days brought tears to the eyes. I thank you for it. We who have suffered much regain confidence in the perpetuity of the renovation of the national forces. We see after our winter the herald of a bright coming spring."

Where is the young heart that would not be carried away by so much sympathy and by so noble and so deep emotion?

MELCHIOR DE VOGÜÉ.

The Vicomte Melchior de Vogüé, the youngest of the forty Immortels, is a talented gentleman of leisure, who, after having

served his country in the unhappy war of 1870, has set himself quietly to philosophizing on the state of France. Having understood and felt the contradictory sentiments which agitate the young generation, its aspirations, its moral sufferings, he has sought the solution of the problem.

M. de Vogüé is one of those rare, harmoniously developed minds, so full of imagination and of elegance, so bright and so easy, that their prose is comparable to the murmuring brook winding its elegant curves across the flowery meadow. As far as we know, he never wrote a real book, only short compositions, appearing generally in the *Revue des Deux Mondes*, have come from his pen. Some ten years ago, he introduced the Russian novelist into France. On that score only, France owes him a heavy debt of gratitude. It would be difficult to estimate how much the literature of the country of the Czars has modified him. His literary baggage comprises a series of articles on the great Russian writers; studies on his favorite authors, Lamartine and Chateaubriand, whose brilliancy of style is often equaled by de Vogüé; historical, or rather historical-poetical reveries; a few symbolic and mystic novelettes; a number of articles on the Paris Exposition, etc. Many of these writings have been united in book form under the titles: *A travers l'Exposition*, *Heures d'Histoire*, *Spectacles Contemporains*, *Regards Historiques et Littéraires*.

M. de Vogüé is a poet, although he writes but in prose. We regret that he is so strongly inclined to poetical beauty, to art and to mysticism. His rôle of moral director of his generation is thereby greatly diminished, for all along the road he stops to gather honey from the flowers, and often forgets practical reality to lose himself in beautiful fancies. At such times those who would like to follow him doubt his earnestness and are tempted to distrust their guide. He has neither the enthusiasm, nor the bottom-deep convictions, nor the hatred of moral evil, nor the boldness of a true reformer. French youth has for a while gathered around his enchanting and sympathetic voice; it has bewitched them, it will not be able to incite them to a regenerating activity.

But we have not yet said what are the essential opinions of Vogüé as a reformer. He believes in democracy and science, those two queens of the age; but science and democracy have not the full secret of life. Of themselves they are unable to maintain social life. The principle which will save the nation is the old leaven of the gospel—love, and the spirit of sacrifice which accompanies it. Science and democracy must recognize that mysterious principle. While visiting the Paris Exhibition he stopped one day before the "Declaration of the Rights of Man," that proclamation of the principles promulgated by the Revolution, and to this day the official basis of the French state, which was written in large letters on the walls of the school exhibit, "My country and my century," says he, "appeared to me as coming out of that fatidical placard. . . . I read twenty times each line, sincerely endeavoring to find a solid foundation for the support of that enormous weight, the social life of a great nation, and every time I came back to the same conclusions, all that I read on that wall is beautiful, generous, desirable, but it is a dream," and one by one he takes the affirmations or the assumptions of the Declaration and judges them false or incomplete: the law is not the expression of the general will; we are not born good; we are not born free and equal, etc. Our ancestors of the great Revolution moved in a chimerical world. "The nothingness of our social foundation

appeared fully only after one hundred years of consecutive destruction; a hundred years during which our France has staggered from convulsion to convulsion from the lack of a solid footing on which to steady its course. . . . The whole century runs on that chimerical ground, and people wonder that it totters."

Thus far it is very well; the science-intoxicated youth feel now too well the insufficiency of the principles of the Revolution to resent de Vogüé's impeachment of this most glorious historical event. But he goes further. After having said the inadequacy of science and reason, and named its complement, love and sacrifice, he points out to Rome as to the power by which the desired renovation can alone be accomplished. Not long ago in an article entitled *Pensées d'Histoire dans Rome*,¹ he boldly exposes his views in this respect. Before the suggestive ruins of past ages, our historian is deeply impressed with the idea that we are on the wrong track with our analytical rage, with our confidence in the detailed document, with our pretension to explain life by laboratory dissections. "The coming world pants for recomposition; it will be grouped only around simple ideas." Now these simple ideas, destined to crystallize the coming era, are found, according to de Vogüé, in the Roman Catholic Church. Rome is the centre of history. It is to the papal Rome, from which we appear ready to break loose, that we must return to escape social death. There the infinite chain of events which make up history begins and ends. It would be highly entertaining, if so serious a question admitted of mirth, to observe the sensitive imagination of our poet carried away over every obstacle before the expressive remnants of the past grandeur of Rome. He tells us that the column of Trajan, terminated and dominated by the statue of St. Peter, a nimbus around the forehead, the keys in the hand, will always be the centre of the world. His veneration for the Pope is no doubt deserved, but many will refrain from joining him in his submissive admiration of the *Vigie*, as he designates him, "in the tower of the Vatican, seeking the road for the world committed to his keeping." M. de Vogüé does not know exactly how the nineteenth century's link will manage to get in the chain; but that does not seem to disturb him in the least, for he assumes the attitude of a true Romanist: the *Vigie* it is who shall find out the way; as for him, his duty is fulfilled when he has pointed to the astonished youth the new brazen serpent to which the universe must look to be saved. The questions of infallibility, of sacerdotal hierarchy, of theocracy, of the various dogmas, sacramental and others, he does not even mention. Is it that he fully agrees with all the doctrines of the church? We can answer no without hesitation. Somewhere he deploras that orthodox teachings do not persuade French youth; it would be otherwise, says he, if those teachings claimed the best established among the scientific doctrines in vogue, if they showed how with a transposition of words determinism becomes the doctrine of grace and predestination; how heredity, with all its biological consequences, enters into the conception of original sin; how selection becomes the redemption by works, etc. But we may suppose without great danger of being mistaken that the Roman Church is not quite ready to make the suggested transposition of words, and meanwhile we do not see well how M. de Vogüé can get along with the church. Let us remember—and this will perhaps be the key to a great puzzle—that beauty is the supreme argument to an artist, that it is abundantly able to cover a multitude of false notions and super-

¹ *Revue des Deux Mondes*, 1892.

stitious ideas, and that the Roman Catholic Church, in its history as well as in its actual form, has a great deal that appeals strongly to an æsthetic nature. His blind veneration for the Church of Rome becomes offensive when he declares that only the men who wear the cloth and who have acquired the right of commanding the hearts through the bruises inflicted to theirs by the triple vow of obedience, chastity and poverty, have really the right to carry on a religious reformation. "Let us be content," says he, "to be approximately honest people, that is already not so easy, even with the seven sins a day conceded to the wise." "The great blow of holy folly which is to change the world, if it must come, will be dealt—it is at least probable—by one of those men who are the natural ministers of the sublime follies, again by the right of their cloth and of their triple vow." The right of their cloth! That sounds decidedly too clerical to please the youth of the nineteenth century. M. de Vogüé might learn before long that the spirit of sublime folly does not blow only in the tattered garments of the traditional church.

PAUL DESJARDINS.

We have come to a personality very different from that of Lavissee or of de Vogüé. The sweetly ironic critic whom we have had occasion to quote, Anatole France, draws the following portrait of our professor of rhetoric: "As to M. Desjardins, one cannot reproach him with a too frivolous gaiety. I do not think that I shall displease him if I say that he gives himself the face of an apostle rather than that of a critic. He is severe. He does not like that people should write. To him literature is the beast of the Apocalypse. A well turned sentence is a public danger. He does not criticise, he anathematizes without hatred. Pale and melancholy, he goes about scattering tender maledictions." Even so would France have spoken of many a holy man whose name is kept in the calendar of the church. To be accurate, the portrait should describe him as "deeply serious" instead of "melancholy," and the word "literature" should be understood to mean that French modern literature of which we have spoken at the beginning.

With M. Desjardins the loud declamation of the natural rights of man has changed into an appeal to the natural duties of all men to their fellow-men; the love of the country, patriotism, has been replaced by the larger moving force, the love of man—the all embracing love; and Roman Catholicism by Christianity. "Thou shalt love thy neighbor as thyself" is the key-note of his message. We have recently re-read the few pages we have from M. Desjardins, together with scattered talks of others about him. From these perusals we have received one of the most Christ-like impressions that ever man made upon us. We have discovered no reason for restriction of approval or of admiration. There are today many a youth and many a man of high social position proud of being called his disciple.

Before proceeding we would like to prevent a possible misunderstanding which the appellation "neo-Christian" might cause. What is being revived contains nothing new, it is simply Christianity devoid of the adulterating additions made by the apostles and after them by the church.

To understand and estimate correctly the significance and the probable consequences of Desjardins' work, it is to be kept in mind that he does not speak from the desert or from some consecrated asylum of devotion; on the contrary his voice is that of one fed

with all the knowledge of the age; it echoes in the halls of the old University of France, the centre of this tottering civilization; the same halls which only the other day heard the sarcastic paradoxes of Renan about God and virtue, and the despairing stoicism of Taine. His disciples are not the disinherited and the ignorant, but the members of the University; the vehicle of the new propaganda is not some modest church paper, it is the great political paper, *Le Journal des Débats*, or the literary review, *La Revue Bleue*, or even the *Figaro*. But let us pass on to his two most important publications, *Le Devoir Présent*, and *La Conversion de l'Eglise*.

Le Devoir Présent, Paris, 1892. This small pamphlet is the manifesto of a man burdened with a mission of moral reform. *Primum vivere* is its motto. The preliminary step in an ethical reform is to come to a decision as to whether the subjection to animal instinct, to egoism, to lying is an absolute evil, or if it is only an inelegance. This debated question is surely more important and especially more urgent than that of the divinity of Christ, or even than that of the existence of a personal God. The author has settled that question for himself. "I profess, in all certitude," says he, "that humanity has a destiny and that we live for something." He does not know exactly what is to be understood by the word "destiny." "There-upon I have only dreams born of a deep but incommunicable love which an equal love only could understand." In the battle fought around these great questions the negatives appear to have the upper hand even without any hope of reversal. The liking for duty seems decidedly to have passed away. Voluptuousness in all its forms, sensualism, is the plague which devours our society. "If one wants to understand what fiery vice burns in us, let him simply observe the looks that dignified men, gray-headed men, cast on an honest woman passing by. What tension, what spasm of lustfulness!" France has lost its soul and it struggles to regain it. We know well what is meant by soul. The humblest among us has felt at certain times superior to himself, he has been filled with the spirit of sacrifice that is, in reality, with the spirit of liberty. We have all observed the fluctuations of that soul in us, now arousing us to enthusiastic activity, now leaving us cold and passive. M. Desjardins does not know how that sublime state of waking love develops, but he knows that only such a state deserves the name of positive morality. There have been times when such a spirit inspired and moved France: in the twelfth and thirteenth centuries, e. g., at the time of the Crusades. The Crusades were the proud victory of a society on natural egoism. Shall such a period recur? "I answer intrepidly that I so believe." Then the author mentions some statements which tend to render to national life a little of the altruistic energy it has lost; the territorial acquisition in Africa is a gift of hope, for it will call for energy, patriotism, sacrifice; the question of Alsace-Lorraine, which is for the French similar to that of the Irish question for England. With the reawakening of the national life, he believes that infallibly the moral and the religious life will be stimulated by reason of their solidarity. Our prophet has sometimes answers which do not satisfy reason, but they are given with so much confidence that they almost persuade. Do you know why France is about to recover her soul? "The sure answer is, that to live one must have a soul. We are then at the eve of having a soul. Let us hold to that position; it is very strong." The other alternative, death, does not seem even to come to his mind. Now since it is admitted and recognized that the hour is approaching at which humanity will recover possession of itself and resume

its ascending march, we have to hasten with all our might the arrival of this happy moment. The future shall be what we now will it to be. "It is why at this decisive instant, when I am about to expose my plans and mark my foot on a virgin snow, I cannot repress the joy, the divine ardor which penetrates me." For years the author had caressed in secret the hopes he now expresses publicly.

The first thing to be done is to understand each other, we positives, to unite ourselves for concerted action. We hear all around us that on some religious creed only we will be able to unite efficiently; as if man could not live until he has made a theological or philosophical stage. Our work shall have in no way an ecclesiastical character. The divers faiths which express themselves socially by the same acts and by an equal love, whatever they may be called, are for us synonymous. Our position is at the confluent of the multifarious sources of morality and of the good desires called Catholic, Protestant, Jewish or philosophic. Everyone while uniting with us may keep his special faith. Our only demand on our associates is that they should live for something, that they should believe in a duty. Here he quotes M. Secrétan, "The cause that we would like to serve, the crisis which our prayer asks, is not a return to the past, but the advent of a new era; it is Christianity in spirit and in truth, which has always subsisted in some souls, but has never reigned." The new faiths proposed, neo-Catholicism, neo-Protestantism, neo-Buddhism, are equally inefficacious, for they reach the heart and the will only through the intermediary of intelligence; they are speculative. The question is not to believe, but first of all to love. Abandoning all project of union on such or such a speculative truth, *we want to reach faith through obedience to duty.*

The last pages of *le Devoir Présent* are taken up by an enumeration in thirteen points of the practical fields in which for two or three years the activity of the positives should be directed.¹ It seems that after this preparatory stage, M. Desjardins contemplates undertaking a more aggressive and sharply limited work of moral reform, such as experience and circumstances shall indicate.

We have said elsewhere that M. Desjardins could be called a pupil of M. Charles Secrétan; as we have already consumed too much of your time with the matter here brought before you, we shall abstain from dwelling lengthily on this philosopher, whose influence is becoming preponderant, in France and in Switzerland, in the spheres of religion and of sociology. But we shall avail ourselves of this occasion to indicate the leading ideas of his philosophy, in order to give honor to whom honor is due, and to mark still more clearly the character and scope of the neo-Christian movement.

* * *

Charles Secrétan, professor at the Lausanne University, Switzerland, correspondent of the French Institute and of the American Association for the Advancement of the Social Science, can be fitly designated as the philosopher of free-will. His system of philosophy finds its strongest support in the *facts of conscience*; he endeavors to reinstate them in their proper place, from which they seem to have been removed by the theory of evolution. For him religion is a form *sui generis* of the moral life; it is not, as many think, a childish form of science; it must necessarily subsist as

¹For complementary information on *le Devoir Présent*, see the *Pedagogical Seminary*, Vol. II. No. 2, p. 238.

long as humanity itself, through all the phases of its development. In *la Civilisation* and *la Croyance*, in which he reviews and gives an answer to the great social, theological and metaphysical questions from the practical point of view, he declares that "the supremacy of the moral idea is the vital element of modern thought, that it is the seed of truth which must, before all things else, be preserved and cultivated," and also that "to think of oneself, to live for one's own self, is to lose one's life. To give ourselves to others is the only chance of salvation: such is the lesson which the present circumstances teach us, . . . that truth of the present moment is the eternal truth, it is the whole truth . . ." It is not amiss that such a philosophy is called Christian. Elsewhere we find these lines pointing again to the centre of his philosophy: "In a time when all the artificial props are ruined, . . . in a time when moral checks alone subsist, when all depends more manifestly than ever on the individual will, to redress that will, to state precisely the idea of duty, to reanimate the sense of duty, in putting it in its place in the centre of life and of thought,—such is the true question, such is the object of our effort." The appeal to the facts of moral consciousness is the point of departure and the bulwark of the whole system. The way in which these facts are presented as scientific facts deserving preëminence over all the other facts of consciousness, and the confidence with which it is done, make of M. Secrétan's work an original system of the highest common sense philosophy. His published works are numerous: *La Philosophie de la Liberté*, 2 vols., *le Principe de la Morale*, *Recherche de la Methode*, *Raison et Christianisme*, *les Droits de l'Humanité*, a volume on Victor Cousin and one on Leibnitz, *la Civilisation et la Croyance*, etc.

We come back to M. Desjardins. Until 1892 he had preached the need of a reform, and in *le Devoir Présent* had traced the lines along which it should be made. In January 1892, he went a step further toward the realization of his theories, and founded the *Ligue pour l'Action Morale*. The earnestness of M. Desjardins is manifested by this decisive step. The *Ligue* is composed of a mere handful of men, but in such an undertaking number is not often a token of strength. It works in silence and almost in retirement. We surmise that for the present, in the face of the difficult task before them, these men feel the need of meditation; they await the coming of the inspiring spirit. The members of the *Ligue* belong to the most varied faiths and social positions; men allied to no church, heretics as to all religious confessions, Roman Catholics, Protestant pastors and laymen are united in the same desire and in the belief—for them the most and perhaps the only important articles of the various Christian faiths—in the categorical imperative of duty and in the power of love. The *Ligue* publishes every three weeks a bulletin for its members.

At times when we allow our imagination to stray away in the beautiful ideal world, we see this humble association rising in strength and in spiritual influence, until its ramifications spread all over France, transforming the bitter fruits of incomplete civilization with that old leaven of Christian love which once already, 2,000 years ago, renovated the world. Is that only a dream? Shall it not find realization? The occurrences of the present seem to give an affirmative answer to this last query. Religions of intellectual

¹ The reality and the extent of the corruption which we have tried to set forth in our rapid survey of modern French literature, find additional confirmation from the fear of social ruin openly expressed by such men as Secrétan, Lavisse, Desjardins, de Vogüé, etc.

creeds are yielding place to the universal religion of the heart; intellectual barriers are already falling to pieces, not everywhere, nor completely, it is true; were we to forget it, we would quickly be recalled to the true state of things by one of the many for whom to be Christian is to believe in a certain set of doctrines and dogmas. One of the standard-bearers of French militant Protestantism, writing in the *Revue Chrétienne*, a strong organ of advanced Protestantism, scoffs at Desjardins and at the *Ligue pour l'Action Morale* for putting action, not only before faith, but even above faith. "A Christian," says M. de Presseusé, "has the duty to salute, with sympathy, the first timid stammerings of a moral reform; he has not the right to associate with such an enterprise on the ill-defined ground of a kind of religious neutrality. . . . The harbor is no more to be found, it is at the foot of the Cross." It is precisely the foot of the Cross—to use an illustration distasteful on account of its many associations with bigoted ideas—which Desjardins and his associates seek, while our advanced Protestants worship still at the feet of the apostles and of the church fathers. In answer to the objection against the preëminence given to action, the words of the Apostle Paul might be quoted: "And now abideth faith, hope and charity, these three. But the greatest of these is charity." Now charity is not faith, but action. But to appeal to a better authority, experience, we would remark that faith, not faith in creeds—that does not mean anything to the mass—but faith in the moral principles, is established by action and can be best developed by action, for it is engendered by feeling accompanying moral activity, positively or negatively exercised.

Before saying a few words on Desjardins' position towards the Roman Catholic Church, let us embrace at a glance, for comparison's sake, the two movements led respectively by Lavissee and de Vogüé

Ernest Lavissee personifies the idea of the renovation of the national life through education. His God is the nation; his gospel is "love your country and prepare to serve it worthily." This is without doubt a large and noble sentiment, able, in a proud and generous people, to check the dissolving effects of a life without purpose. The sight of a nation shaking off its pessimism, its sensualism, its nihilism, at the thrill of a newly awakened patriotism, is one of the grandest spectacles that history presents. It is a striking illustration of the saving influence of altruism. But is not the peace of our civilization endangered by this stirring up of national pride? Does it not bring with it the hatred of the enemy and the thirst for revenge? Is patriotism the true support of the moral life? No, it is but a tonic or a palliative. The devotion to one's country cannot be sufficient to a complete healthy, human life. In moments of intense national rivalry, it will be a powerful lever. But what will happen after the victory or the defeat?—Just what happens, after the encounter, in the well-regulated life of the prize-fighter. Civilized society needs a deeper and truer base of existence, including in itself patriotism and all other virtues. The citizen's life must have a purpose distinct from and above the service of his country, a faith having its foundation in his deeper moral nature. M. Ernest Lavissee does not deal with the true problem.

We have seen that le Vicomte Melchior de Vogüé is a charming writer, a beautiful mystical soul, not in the least inclined to asceticism, but rather having an artistic weakness for the beautiful,

especially when it is allied to grandeur and power. To the insufficiency of science and democracy, he advocates the addition of the Christian principles of love and sacrifice, and courageously declares his belief that nothing durable can be done nor will be done for the salvation of society independently of the Roman Catholic Church. There is room for some reforms in the church, but it is evidently not the business of its dutiful sons to point out to an infallible Pope the defects which mar the grand old structure and make it untenable to so many good men. We must, in all religious affairs, await the good pleasure of His Holiness. It appears that M. de Vogüé lulls himself with the hope that the imperative needs for some form of religion, which now torment the young generation, will prevail upon them to throw above board the clearest and grandest acquisitions of the past—the independence of the reason and the liberty of conscience—and cause them to imprison themselves in that senile ecclesiastical machine.

As soon as M. de Vogüé had promulgated his fancies, the French youth raised a loud cry, a good deal like a sneer, against the man to whom they had listened with joy and thankfulness as long as he talked of love and sacrifice only. Traditional authority, ecclesiastical authority, papal infallibility, cannot suit the people who made the Revolution of 1789; no more can the orthodox doctrines of the church satisfy the youth, nourished with the science of the nineteenth century. The agitation was greatest among those who regard the religious revival with a suspicious eye, and this spring the opposition crystallized into a society calling itself "*La Ligue Démocratique des Ecoles*." Its programme manifests a strong anti-religious sentiment. To apply in all questions the severe scientific methods only, and to take as sole rule of conduct the reason, to proscrib[e] all mysticism and all religionism, are the main articles of its statutes. To this negative side is added a positive one: the study of the social questions. This open and constituted opposition is very regrettable, but it was to be foreseen by the readers of de Vogüé's articles. Soon after the foundation of the *Ligue Démocratique*, a sort of great inaugural was held at the "*Hôtel des Sociétés Savantes*," at which M. Aulard, the distinguished occupant of the new chair of the History of the Revolution at the Sorbonne, was the orator. He availed himself of the occasion to assail vigorously with arguments and railery the neo-mystic-religious dreams. To them he opposed the principles of the Revolution and the declarations of science, on which alone the future can be built. It is in vain that some gentlemen of leisure, having found Chateaubriand's inkstand, have set about resuscitating the faded glory of the "*Génie du Christianisme*." The unknown God, whom they say young men are seeking, is only too well known. It is the God who, for so many centuries, has fettered the reason. M. de Vogüé, who, although not named in the speech, was the special target of the orator, answered in a bright but unsatisfactory article.¹ The Quartier Latin did not remain a passive spectator of the discussion. French students are always near the point of ebullition. Immediately the old politico-religious passions sprang up and superseded the tone of quiet religious earnestness which had swept over a good part of the Quartier. Catholics and Liberals, neo-Christians and Radicals, who had remained ill-defined, drew into battle array. Manifestations were held by the different parties. On May the 17th, Professor Aulard was to lecture on the "*Convention Nationale*" of 1793, and

¹*Revue des Deux Mondes*, May 1, 1903.

specially on the discussion, then held, relative to the article on religious liberty. The amphitheatre was crowded long before the appearance of the professor. As he enters, cries of *Vive Aulard! Vive la Revolution!* arise. He hardly begins when a group of Catholic students leave the hall ostentatiously. They are followed by a large number of Liberals. In the street, blows are brought to bear on the debate, until the police intervention makes an end of the affray. Catholics and Free-thinkers are again at sword's-edge in the university. MM. Aulard and de Vogüé, the champions of the old rationalism and of the old clericalism, must deeply regret this explosion of political passions caused by their utterances, whatever may be their convictions. The safest anticipation that can be made on the issue of this regrettable conflict is that M. de Vogüé's influence on the students will be limited to the small number of Catholics. The wise keep away from these extremes, and instead of placing themselves under the auspices of secular or ecclesiastical historical events, they remain in the sphere of the revelations of consciousness. Only there peace and good will towards all can prevail.

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M. Paul Desjardins, as differentiated from Lavissee, views the problem in its essential and universal aspect. Sensualism and egoism, these inseparable sisters, born of a diminution of life, itself the result of the lack of great, disinterested ambitions and of the negations of science, are the real evils. What is needed is a solid basis on which an individual—and consequently also a national—life can be built. Where is that foundation to be found? The exterior supports of right living have fallen down. Exterior revelation, tradition, reason itself are disbelieved. Desjardins seeks the answer to this question in the inner life of man, in the centre of his nature. When everything else has failed, it remains in us a *sense of direction*; there is the answer. Do not rely on an exterior revelation, do not trust in any external authority, nor even in reason, but rely on your deeper self. Learn from the facts of conscience, of which you are the passive witnesses. Do what they bid you do. Submit to your nature, to nothing else. Obey duty. The consequences of this obedience you will accept as necessary, as true. Faith in certain ideas will result from it, but it will be a rational and unshakable faith, for it will be born of your own experience.

There is surely nothing absolutely new in this solution, which we believe to be the purport of M. Desjardins' message, although he nowhere expresses it in that form; nevertheless, we see in it the formulation of a truth which has always been the ultimate guide of man's life, unconsciously at first and rising slowly to consciousness with the progressive evolution of humanity; man does not acknowledge anything binding except that which he finds in himself; he may project it outwardly; he may first perceive it in some other person, who, then, becomes a revelator, and he may submit to his authority; or he may find the expression of his religious needs in the articles of a creed, and, unconsciously reversing the psychic process which has taken place, attribute to the creed itself an authority which, in reality, it owes to its symbolic expression of soul-contents which have not yet reached self-consciousness. The essence of a person's belief rests always on facts directly experienced, whatever may be the person's opinion on church and on creedal authority. The principles on which Desjardins proceeds, ap-

pear to be the crowning achievement of a process, for which the very clumsy word "moral-self-consciousification" might be suggested. The open declaration of this principle and the effort put forth to make it triumph, constitutes, it seems to us, a religious revolution, a revolution corresponding in the moral and religious world to the social and political Revolution of 1789. Then men were declared politically free and equal; to-day they are declared religiously independent from all external authority. In 1789 the sovereign authority of reason came to the self-consciousness of the mass; to-day the sovereign authority of conscience arrives to the self-consciousness of the mass. To the declaration of the political and social rights of man, France is about to add the declaration of the religious and moral rights of man. The psychologists of all lands will watch with intense interest the beginning of this new era, for we need not draw here your attention to the consequences of this revolution. It brings with it the realization of the more or less definite desires of the best men of all the civilized nations with regard to religious reforms. It heralds the fall of a religious authority not resting on the conscience. It is the death of tradition, which keeps us enchained to an age long over-grown; the fall of the intellectual creeds, the belief in which was and is still made the condition of salvation; but above all it is the aurora of a new day in which Christian love shall reign, because men will seek their inspiration in the holy revelations of their conscience.

M. Paul Desjardins appears to us the apostle of this Revolution. He has not, we must acknowledge, seen his way clearly from the first. Although in his early publications he declared himself neutral as to the various religious faiths, it appeared to many that he was leaning towards a reformed Roman Catholicism. Certain persons, for instance, related that he had gone to Rome and had received complete approbation from the Pope, and that from that day his work was under the tutelage of the church. M. Desjardins, indeed, went to Rome, but it was for the ostensible motive of obtaining a dispensation desired by some scrupulous Catholics in order to feel at liberty to work in common with heretics. The dispensation was granted. A month ago he defined clearly and decisively his attitude towards the church in general. Allow me in concluding to set forth before you this attitude as expressed in the articles published in the *Journal des Débats*, under the title, *La Conversion de l'Eglise* and *La Vraie Eglise* (the true church).

In the bold articles on the conversion of the church (November 1892), M. Desjardins proposes, without acrimony or violence, but also without tergiversation, what he considers to be the necessary transformations which the Roman Catholic Church must undergo in order to regain control over the people. It is in one word the return to the spirit of Christ. "The conversion through which the church must pass is a conversion of the heart. It must become again a school of love and of liberty. The church must bring to the Republic the breath which gives long life to cities in giving to each citizen that which is the whole of life according to Christ and according to reason, namely, the spirit of peace in self-devotion to mankind, and of faith in salvation through sacrifice. It must spiritualize itself previously to spiritualizing the people." The church is instituted perpetually to repeat by its example and by its speech: sacrifice yourselves; love and you shall live—and not to direct states. "The social duty of the church holds, then in these three rules: (1) To minister to the humble who carry the great burden; (2) To speak to them and to other men by means of love

and of self-sacrifice; (3) To develop among them that spirit of love and of self-sacrifice."

The church must then break with ambition, with wealth, with power, with the spirit of domination and of coercion. The whole of its authority must consist in the natural ascendancy exercised by respectability and amiability. It must no more be a wheel in the state machine. The spiritual must separate from the temporal. The shocking anti-Christian inequalities established by the traffic made with ceremonies and even by the dispensation of the sacraments must disappear. As no one can serve two masters, it is also evident that the church must detach itself from the worldly solemnities and customs which make of it a temple of Mammon, and that the false splendor of devotion, the various classes of marriages, etc., must be set aside.

The reader asks himself, what would remain of the Roman Catholic Church if all these reforms were realized? What would become of the hierarchy, of the entire submission of the one to the other? What of the infallible authority of the Pope? And as to dogmas, sacraments and other ordinances, a few lines at the end of the last article of November permit us to infer a radical denial of the intrinsic value given them by the church: "Public worship itself must not be overdone; inner fervor gives to it its whole value."

Under the title, *The Conversion of the Church*, M. Desjardins was, unwittingly or not, demanding the destruction of the Roman Catholic Church. This series of articles was suddenly interrupted, and the author had not yet clearly declared what everybody wanted to know, whether he entertained the intention of a future adhesion to the Church of Rome. At last, five months later, in April last, the *Journal des Débats* published the long expected conclusion. It was entitled *La Vraie Eglise*. In it M. Desjardins explains why, to remain Christian, he cannot become Romanist. The time elapsed between Christ's gospel and our century is to be regarded as a sort of prolongation of paganism still enveloping the pure Christian spirit. "Modern metaphysics has come to take up the work of Saint Paul and to consummate the rupture between the spirit and the law. Let us not hesitate, we must help on. Here is the hope of the future, not only of humanity, but also of true Christianity, which is but dawning."

Let us unite with Desjardins and his friends in the effort to shake off the encumbrances of the past. Let not the veneration we have for the works of the dead blind us to the needs of the living. The throes through which France is passing will soon reach to other nations. These throes are not to be feared, for they are but as the struggle of the butterfly endeavoring to set itself free from its gross-imprisoning chrysalis; man is about to take an epoch-making step toward the more complete realization of his divine nature.

PSYCHOLOGICAL LITERATURE.

Les Phénomènes Psychiques et la Température du Cerveau. ANGELO MOSSO. Phil. Trans., Vol. 183, pp. 299-309. 3 Figs. (Croonian Lecture, 1892.)

Mosso's previous work upon circulation in the brain, and also upon mental and muscular fatigue, have given him most valuable preparation for attacking the delicate problem of brain temperature in relation to psychic activity. His earlier work revealed the fact that blood pressure in the brain rises during mental activity, and also that there may be fluctuations of blood pressure, which are independent of psychical activity. Mosso had also become suspicious that Schiff's theory of brain temperature needed modification, and had been made duly alive to the fact that brain temperature would mean very little unless the temperature of the blood was taken at the same time.

Experiments were made upon animals under morphia and anæsthetics, and also upon man. Delicate mercurial thermometers, made expressly for the purpose by M. Baudin of Paris, and capable of reading to $0^{\circ}.002$ C., were employed, the bulb being generally placed between the dura and the skull, but in some cases under the dura. Temperatures of interior of body, blood in carotid artery and brain were taken simultaneously.

In general, brain temperature is lower than interior body temperature. To demonstrate that this is due to radiation of heat from surface of head, it is only necessary to keep the animal in a medium heated to the temperature of the rectum. Under these circumstances, the temperature of the brain is always higher than that of interior of body by from $0^{\circ}.50$ to $0^{\circ}.63$ C. This proves that the brain is the seat of active chemical changes, which make it a great thermogenic organ. Under ordinary conditions, great psychic activity or the action of exciting drugs may cause sufficient increase of heat production in the brain to raise its temperature as much as $0^{\circ}.3$ above that of the internal organs.

Curves showing superimposed, the internal, carotid and brain temperatures give great clearness and precision to the subject. In profound sleep under morphia, the curves of brain and carotid temperatures are seen to very nearly coincide,—the brain temperature a trifle lower, and both somewhat lower than the internal temperature. Shouting in the ears of the animal causes a slight rise of brain temperature, and electric stimulation of the cortex is shown to cause a sudden rise of temperature considerably above that of the carotid and almost up to internal temperature, the animal showing no signs of waking. Experiments made while the animal is awake show a great amount of heat production in the brain over that produced during sleep. This seems to be needed for the mere maintenance of consciousness. Greater psychic activity occasions a scarcely perceptible increase in temperature, the greatest rise recorded from this cause being $0^{\circ}.01$ C.

Experiments with various anæsthetics and narcotics show that these suspend the activities of nerve cells to such an extent that in deep anæsthesia, electrical stimulation produces no rise in brain temperature. Elective action of stimulating drugs on the different tissues is well shown by the injection of cocaine, ten centigrams of the hydrochlorate causing a rise in brain temperature of $0^{\circ}.36$ C., no change being observed in either muscles or rectum. The effect of cocaine upon the brain is rendered more conspicuous by combination with curare. In a deeply curarized dog, the temperature of the whole body was observed to rise 4° , from 37° to 41° C., within a half hour after the injection of the cocaine. That the effect upon the brain caused this rise is shown by the brain temperature being $0^{\circ}.2$ C. above that of the rectum during the time. The experiments are of special interest as indicating active chemical changes within the brain.

The Changes in the Optic Tracts and Chiasma in a Case of Unilateral Optic Atrophy. WILLIAMSON, R. T. AND M. R. C. P. (LOND.) Brain, Part LVIII. p. 230. 1892.

Hannah T., age 56. Complete loss of vision R. eye; atrophy of R. optic disc. Left eye and L. field of vision, normal. Sudden onset of blindness in R. eye after an attack of rheumatism, four years previous to death. Findings agree in the main with those, for similar cases, recorded by Purtschner and v. Gudden. The optic nerve of right side was much shrunken, and contained almost no healthy fibers. Left optic nerve was normal. In the chiasma, the degenerated optic nerve fibers were found to pass to the inferior surface of the opposite side. In the optic tracts, an area of degeneration could be plainly seen occupying the central area of the right side (uncrossed fibers). The left optic tract was much shrunken, and showed degeneration chiefly in the inner half of the inferior surface. Indications of degeneration extended also to the outer half of the inferior surface and to the outer surface. Hence uncrossed fibers occupy the central portion of the optic tract; while crossed fibers, with slight modification of Purtschner's statement, lie along the periphery of the tract. Microscopical examination was made by Weigert's method. A series of eleven well selected drawings add great clearness to the description.

I.—*Il cervello; nuovi studi di fisiologia normale e pathologica.* LUIGI, LUCIANI. Firenze, 1891.

II.—*Sull' origine e decorso dei peduncoli cerebellari e sui loro rapporti cogli altri centri nervosi.* MARCHI, VITT. Firenze, 1891.

Of the above papers, the first deals with the physiology, the second with the anatomical connections of the cerebellum, as shown by degenerations resulting from partial or entire extirpation.

Dogs and monkeys were employed for the experiments. The cerebellum was removed, wholly or in part, under narcosis produced in dogs by hypodermic injection of morphia and chloral (morphia 2.5 centigram, chloral 1 gram), and in monkeys by morphia and chloroform.

The principal operations studied were: *Extirpation of the middle lobe of the cerebellum; extirpation of the whole cerebellum; extirpation of one-half of the cerebellum.* This latter was done by dividing the vermis in the median plane by means of a Græf's knife.

Operations upon the cerebellum at best are difficult, great care being necessary to avoid excessive hemorrhage and the injury to

adjacent parts of the brain, and especially of the medulla. Hemorrhage was arrested by means of bits of sponge soaked in corrosive sublimate solution (1-1,000). The operations were eminently successful, as is attested by the fact that Luciani kept his animals months and even years after total extirpation of the cerebellum. In this way, he was able to distinguish between temporary and permanent effects.

For convenience, the results are classified under five categories: 1. *Phenomena of irritation*, disturbances of innervation attending more or less closely upon the operation. 2. *Phenomena of deficiency*. These are to be attributed to lack of the portion of the cerebellum, which has been removed, and form, perhaps, the chief feature of interest in the research. The following symptoms are noted as characteristic of cerebellar deficiency: Lack of voluntary power—*asthenia*; lack of muscular tone—*atonía*; and uncertainty of movement, tremor, oscillation—*astasia*. It is impossible to separate these clearly from the next group. 3. *Phenomena of compensation*; classified as organic,—a gradual lessening of the phenomena of deficiency and functional,—abnormal movements directed to correct faulty movements occasioned by deficiency. 4. *Phenomena of degeneration*; in other parts of the nervous system following cerebellar extirpation. 5. *Trophic phenomena*; it is claimed indirectly, that the cerebellum exerts an influence upon the nutrition of the tissues.

I.—*Effect of division in the median plane*. In the case of three animals, the cerebellum was divided in the median plane. One dog lived twenty-two months after the operation, and was carefully studied. Some difficulty in co-ordination was noted at first, and, as a phenomenon of deficiency, lack of energy in the performance of voluntary acts and diminution of muscular tone were the more lasting results. Tracings of the dog's footprints were taken by dipping the feet in different colored inks; and these showed that compensation became so perfect that it was difficult to discern anything abnormal in the gait. The general disturbances are, however, sufficiently marked to lead the author to conclude that the cerebellum is physiologically a unit as well as anatomically, and not divisible bilaterally without interfering with its function.

II.—*Effects of removing the middle lobe*. Four dogs and two monkeys were operated on. The case of one monkey may suffice to illustrate the other experiments of this class. Immediately after the operation, there was noted tonic contraction of neck muscles and tonic flexion of upper and lower limbs. By the next day, the animal was able to extend a weak tremulous hand for fruit, but if placed on the floor, could not keep its feet, and tended to fall from right to left. Second day after operation, the monkey lay with limbs flexed, and neck and trunk in continual oscillation. After about ten days, it had regained power to walk slowly and with fair co-ordination.

By raising a monkey from the floor by means of a belt around the waist and a pulley, allowing it to hold on with its hands to a dynamometer ring fastened to the floor, a method was devised of testing voluntary power or muscular strength. In this way, a healthy monkey would pull 8 to 10 kilos. After removal of vermis, he was able to register only 3 kilos. In a month, however, he was able to pull 5.5 kilos. In two months, recovery had become so complete that it was distinguished from the healthy monkeys with difficulty. In a year, muscular power had risen to 9 kilos. The dogs gave similar results, except that instead of flexion, the limbs were extended.

III.—*Effects of incomplete unilateral extirpation.* (Extirpation of one lateral lobe.) This operation was performed upon dogs. The symptoms were in the main similar to those attending extirpation of the vermis, but differed in some points. The *irritative phenomena* consisted of curvation of the spine toward the wounded side, with tonic extension of the anterior limbs on the same side, and rotation of the body upon its longitudinal axis from the wounded toward the healthy side with strabismus in the same direction. The *phenomena of deficiency* were confined to the side of the lesion. *Compensation* took place gradually, so that the animals regained power to walk.

IV.—*Effect of removal of one-half of the cerebellum.* (Both dogs and monkeys.) Monkey, right half of cerebellum removed June 26, 1884. After operation, the head was bent to the right, and rotated toward the left, rotation about long axis of body from right to left.

June 27.—Still a tendency to rotate from right to left, which the animal tries to avoid by catching hold of something with the left hand. The head is held as before. Both limbs of the right (operated) side are held flexed. The right pupil is more contracted than the left, with strabismus of the left eye inward and upward, and nystagmus of both eyes.

June 28.—Pupils of more equal size, tendency to rotation less. In attempting to take food, there is great oscillation of right arm.

June 29.—The above phenomena present, but less marked. The right leg has relaxed; tonic flexion of right arm persists.

July 1.—Phenomena of irritation and deficiency decreasing steadily. The animal takes fruit with the left hand. It uses the limbs of the left side, while those of the right hang apparently inert.

Middle of July.—Begins to use right arm more freely. Strength of arms as registered by dynamometer, 3.5 kilos.

September.—Traction of arms, 8.2 kilos. Great improvement in walking, though it raises its feet high off the ground. Head is still inclined toward the right, and slight strabismus persists.

April, 1885.—Still timorous and suspicious. Head is inclined to the right. In walking, the body is bent toward the right, and progression is in consequence obliquely forward and to the right. Indecision of voluntary movements is noticeable. Food is invariably taken with the left hand. There is still slight strabismus, the right eye turning inward, the left outward and upward. Slight ptosis of the right upper lid is also noted.

The phenomena of irritation and deficiency are what would be expected. The fact of special interest is that compensation does not become perfect. One-half of the cerebellum cannot perform the functions of the other half; and the cerebral hemispheres, with one-half of the cerebellum present, are not able, at least in ten months' time, to render movements and position bilaterally symmetrical.

One lateral lobe was removed in case of dogs with the vermis destroyed, with results in the main like those just enumerated for *hemi-extirpation*.

IV.—*Effects of complete extirpation of the whole cerebellum.* Operation on both dogs and monkeys.

June 12, 1886.—Entire cerebellum removed from a monkey. After operation, tonic flexion of both arms, the right more than the left; was noted also slight convergent strabismus of both eyes. It is unable to maintain an upright position. In about an hour, the animal was able to crowd its back into the corner of its box, thereby holding itself upright, and to take a piece of fruit with its left hand.

June 13.—Still keeps its back in the corner of its box, and holds out both hands when offered food. Deprived of support, it falls in a lump, and is unable to raise itself up again.

June 14.—Condition similar to that of previous day. When unsupported, tends to rotate from right to left. It can climb up the side of its cage, but cannot remain there without support.

June 16.—Placed on the floor, unsupported, it takes a few steps forward and soon falls toward the right. In extending its hand for food, there is uncertainty of motion not previously noted.

July.—When sitting, head and trunk oscillate, and eating is accompanied with constant tremor of arms and trunk. It walks more slowly than a normal monkey, in a hesitating, oscillatory manner and zigzag course. Tendency to fall is less marked.

August.—Ataxic phenomena about the same as in July.

October, 1886—June, 1887.—No change; possibly a slight improvement in health.

July, 1887—January, 1888.—Ataxic phenomena persistent. It walks with limbs far apart and continual oscillations of head, and descends a ladder with great care and deliberation. During this month, the animal was killed. Autopsy showed that the entire cerebellum had been removed, except a small portion of each flocculus. The cerebrum appeared normal.

For complete extirpation of the cerebellum, the phenomena of irritation and deficiency resemble those found in extirpation of the middle lobe, except that they are more intense, last longer, and are more widely diffused.

VI.—Effects of extirpation of the cerebellum, combined with uni- or bilateral destruction of the sygmoid gyrus.

Compensatory movements were naturally supposed to arise from the motor regions of the cerebrum; and to test this point, the experiments upon the sygmoid gyrus were undertaken. Only dogs were employed.

One-half of the cerebellum was first removed, with results already described. The second operation consisted in partial destruction of both sygmoid gyri. This caused paresis of the extremities and defective sensibility. Finally, the remaining half of the cerebellum was removed. The phenomena of deficiency are now found to be persistent. Eleven months after the final operation, the dog was unable to walk without support. The experiments bear out the conclusion that deficiency of cerebellar innervation is compensated for by motor-sensory areas of the cerebral cortex, especially that part located in the region of the sygmoid gyrus.

A long discussion follows, explanatory of the above observed phenomena. Here the chief interest centres about the phenomena of deficiency, and these lead the author directly to his view of cerebellar function.

In the first place, Luciani's experiments show that cerebellar deficiency is manifested only in the sphere of voluntary movement. Sensation, instinct or intelligence is not affected. All the special senses, dermal and muscular sense, is intact. The instincts of self-preservation and reproduction are as active as ever. There is noticeable, however, in dogs, a certain listlessness and lack of energy. Aside from this, nothing of a psychic nature is to be correlated with the function of the cerebellum.

The cerebellum is, therefore, not an organ intercalated in the main paths of the cerebro-spinal system, but a tonic reinforcing centre placed alongside the main paths. It is more and more

highly developed as we ascend the vertebrate series, but in no form does complete muscular paralysis follow extirpation of the cerebellum. Further, the power to co-ordinate muscles remains. The disturbance of co-ordination so often noted in cases of cerebellar lesion, is not primarily lack of co-ordination, but lack of the tone, the energy to hold the muscles in a co-ordinated contraction. So that when the animal by careful attention has co-ordinated his muscles to maintain a certain position, if his attention is called away to something else, food, for example, he suddenly falls.

It remains to consider what Luciani calls the *trophic phenomena* associated with lesions of the cerebellum. Degenerations in the various parts of the brain and spinal cord plainly show that the cells of the cerebellum are the trophic centres for nerve fibers, which pass beyond its limits. These will be described later. Further, for the first few days after operation in some of the animals, polyuria, glycosuria and acetoneuria were present. Marasmus, without apparent cause, alopecia, erythema and eczema, conjunctivitis and keratitis occurred in several cases. It is difficult to see in what way these prove any direct trophic action. There is little uniformity in their occurrence, and, moreover, they all heal readily upon the application of antiseptics. Fatty degeneration, with increase of muscle nuclei in the muscles of the limbs, is also noted as a trophic phenomenon.

A lengthy discussion of all the theories concerning the functions of the cerebellum follows, and the book closes with a chapter upon "first lines of a new doctrine." This has already been hinted at, and may be made plain with a few words in addition. The cerebellum is a nervous system by itself, added to the main system for the "athletic," "tonic" and "static" reinforcement of motor impulses. Its action upon the body muscles is mainly direct, thereby differing from that of the cerebrum, whose action is crossed. Experiments do not show that the vermis is of any greater or any different functional value from the hemispheres. In fact, the organ is not a collection of centres or parts, which exert a special influence upon special muscles or groups of muscles, but it is a physiological unit. From it flows continuously and quietly a stream of nervous impulses to the whole muscular system. Removal of the cerebellum is thus shown in lack of muscular tone, and not in paralysis, partial or complete, which is apt to follow extirpation of portions of the cerebrum. The cerebellum is a reinforcing organ for the cerebro-spinal system.

The brains and spinal cords of the dogs and monkeys operated upon were given to Marchi for the purpose of working out the degenerations resulting from the partial or complete extirpations. Marchi employed Weigert's hæmatoxylin method, and a method of his own, which consists of hardening the specimens in Müller's fluid for a short time, and then further treating small pieces, 1 cm. cube with a solution of Müller's fluid and osmic acid (Müller's fluid, 2 parts; osmic acid, 1 per cent., 1 part), for 8 to 10 days longer. Degenerated portions by this process are stained black.

Most instructive are naturally the results following extirpation of half the cerebellum. These results for extirpation of right half are briefly as follows:

(a) In the superior peduncle and in region of the cerebrum, the method of Marchi gave evidence of degeneration in both peduncles, in the right more than in the left. There was much degeneration of the left red nucleus and a little of the right. There were also

evidences of the degeneration in the fillet, in the third pair of nerves, in the pyramidal tracts of the crura, in the posterior longitudinal bundle, and in the right optic tract.

(b) Complete sclerosis of the right middle peduncle was found, and the degeneration extended over the middle line, and involved the gray matter of the pons. Degenerated nerve fibers were also found in the right fifth nerve, in the fillet, in the posterior longitudinal bundle, and in a small bundle of fibers which lie behind and external to the superior peduncles.

(c) In the region of the inferior peduncles, the median portion of the peduncle and the external portion of the restiform body of the same side were degenerated. The other parts involved are certain of the stris acusticæ and a portion of the external auditory nucleus, many fibers of the ascending root of the fifth nerve, the fillet, the interolivary layer, the posterior longitudinal bundle, some fibers of the hypoglossal nerve and of the pyramids. There also appeared to be some degeneration of the olivary body of the opposite side. The above degenerations were shown by Marchi's method. Wiegert's method did not give quite so diffuse showings.

(d) In the spinal cord degeneration was demonstrated by Marchi in the antero-lateral region of the same side with the extirpation, the affected fibers lying in part in the anterior portion of the direct cerebellar tract, and in part in the anterior pyramidal tract.

Due to extirpation of the vermis, Marchi demonstrates slight degeneration of the superior peduncles, although in the fillet, the posterior longitudinal bundle, the roots of the third nerve and the optic tracts, degeneration was considerable. This would indicate that the superior peduncles arise mainly from the lateral lobes. In the middle peduncles, all transverse fibers were degenerated. The inferior peduncles showed degeneration only in the lateral part of the restiform body. Beside the above, degeneration was demonstrated among the fibers of the trapezoid body, and in the roots of the fifth, eighth and twelfth cranial nerves, and also in the antero-lateral columns of the spinal cord.

Marchi summarizes his results as follows:—

1. The decussation of the superior peduncles is not complete. A small bundle of its fibers goes to the optic thalamus of the same side, while the main part of the peduncle ends in the red nucleus of the opposite side.

2. The middle cerebellar peduncles are not simply commissures between the lateral hemispheres. Many of their fibers end in the gray matter among their pyramidal bundles of the same and of the opposite side.

3. The inferior peduncle sends a bundle of fibers to the olivary body of the opposite side. It probably consists of afferent and efferent fibers.

4. The posterior longitudinal bundles and the fillet arise from a common source in the vermis. They pass down with the middle peduncles, and become connected with the nuclei of the cranial nerves, the nuclei of the pons, the corpora quadrigemina, and probably with the corpus striatum. At the level of the olive, the posterior longitudinal bundles unite with the fillet and thus make a connection between the antero-lateral regions and the anterior horns of the spinal cord.

5. The cranial nerves are intimately connected with the cerebellum by means of the fillet and posterior longitudinal bundles.

6. The origin of the three peduncles is diffused over the cerebellum, but the middle lobe gives rise to most of the fibers of the middle

peduncles and the nucleus dentatus, to the greater part of the fibers of the superior peduncles.

The above shows a more intricate connection of the cerebellum with other parts of the nervous system than has hitherto been demonstrated.

Sezione mediana antero-posteriore del verme del cervelletto. GALLERANI, G., AND BORGHERINI, A. *Revista Sperimentale di Freniatria e di Med. Legale*, Vol. XVIII. p. 369-388. 1892.

The authors state at the outset that their work was compiled before Luciani's book, *Il Cervelletto*, appeared, and that they will not take this occasion to discuss it. The work is further a continuation of experiments reported in the same journal in 1888. They bring forward but two experiments, both upon dogs, in the first of which the median division of the vermis was partial, extending about two-thirds its depth; the second, it was complete.

The first dog, one day after the operation, was unable to stand upon his feet. On the second day, he made weak attempts at walking. The trunk oscillated. On the fourth day, walking was still performed with legs half flexed. The gait was plainly ataxic, and ataxy of head and neck was seen when the animal tried to take food into his mouth. This condition of things is still present upon the ninth day. Observations upon the thirty-third day show that there is still ataxy, and lack of power to co-ordinate the muscles properly. This is seen especially when the animal begins a certain action. Once started, he can go on fairly well. He can run well, but in a slow walk his course is zigzag. All symptoms have about disappeared by the ninety-fifth day, when the dog is killed. Autopsy shows that the incision extended through about two-thirds of the depth of the vermis, and was healed with connective tissue.

In the case of the second dog, the phenomena are more marked and persistent. Upon the 142d day, the erect posture was maintained with oscillation of the trunk and with legs wide apart. Voluntary acts are done with slowness and attention, and although considerable improvement has been made in this respect, they are still ataxic. At this time, the animal was killed, and it was found that the division of the vermis was complete and remained so, the wound having become filled with connective tissue.

The authors consume three pages with their conclusions from these two experiments. Their aim in this seems to be to refute the idea of Schiff to the effect that the asymmetry of cerebellar lesions is of special importance in determining the amount of disturbance, and to contradict everything possible in Luciani's book. They further insist upon the correctness in the main of the old view, viz., that the cerebellum stands in close relation to the co-ordination of voluntary movements, both such as are directly voluntary and such as have become automatic by long use. The action of the cerebellum they would explain, as Wundt does, as a kind of complicated reflex, which is composed on the one side of all the centripetal impulses from the skin, muscles, and organs of special sense, and upon the other side, of all the motor impulses which keep the body in equilibrium or render movement orderly. A lesion of the cerebellum will create a disturbance of co-ordination, not from the fact that it is asymmetrical, which has no influence in itself, but in proportion as it severs connection in the cerebellum with the different parts of its own mass, and especially as it interferes with the normal connections of the cerebellum with the other parts of the nervous system. The vermis connects the lateral hemispheres,

and hence it is that lesion of the vermis is more apt to produce motor disturbance than lesion of the hemispheres.

The above summarizes the points of chief interest in their paper. It is followed in the journal by a six-page "nota critica" by Luciani, in which he is not careful to spare the feelings of the "youthful authors," as he repeatedly calls them. That it is difficult to make out the exact meaning of a number of Gallerani's and Borgherini's concluding statements may be seen from the fact that Luciani himself, presumably a master of the Italian language, is unable to do so. Before some of their sentences, Luciani says that he "stands with open mouth, like the country bumpkin before his curate, to whose long words his intelligence does not reach." He is not slow, however, in asking whether in this case the intelligence of the curate or the audience is at fault. The criticism abounds toward the end in such expressions as "I giovani autori;" "Qui l'audacia dei valorosi giovani;" "Questo concetto dottrin ali;" and the like.

In as far as this is a family quarrel among Italian physiologists, we do not wish to follow it. But if there is anything to be said in favor of the old view of cerebellar function, now is the time to say it. If after the entire cerebellum had been obliterated, as in the case of Luciani's monkey, the animal is able, within an hour after the operation, to "reach out a trembling hand for fruit," it would seem to be proof positive that the mechanism for muscular co-ordination must be somewhere else than in the cerebellum. If on the other hand a lesion of the cerebellum can be made which causes "oscillation," "ataxy," and in general faulty co-ordination of the muscles one hundred and forty-two days after the operation, we are glad to have attention called to the fact.

The Origin of the Sertoli's Cell. WATASE. *Am. Naturalist*, Vol. XXVI. May, 1892, p. 442.

On the Significance of Spermatogenesis. *Ibid.* July, 1892, p. 624.

On the Phenomena of Sex Differentiation. *Ibid.* *Jour. of Morphology*, Vol. VI. p. 841.

In the above papers Watase advances some new experiments which disprove, or profoundly modify, the old dictum of the cytologists, "Chromatin is unsexed." By the use of differential stains, at any rate, male and female nuclei are found to react differently. Watase employed the three aniline colors, viz., cyanine (blue), eriothosine and chromotrop (red), and found that the nucleus of the ovum stained red, as in the case of most tissue cells, while that of the spermatozoan stained a deep blue. This fact Watase has succeeded in demonstrating for a long and widely different series of animals, including both invertebrates and vertebrates from the starfish to man.

The experiments are chiefly confirmatory of Auerbach's recent investigations, but at one point at least they constitute a decided advance. This is the fact given by the author as the reason for the last paper on the list, that, while the male and female nuclei as found in ovum and spermatozoan are as unlike as blue and red, after penetration of the spermatozoan and before the union of the two, the male and female pro-nuclei come to stain exactly alike.

We are led by the author's statement to the effect that the above papers are of the nature of preliminary communications to look forward to a more complete account of the work. The above is sufficient at any rate to again emphasize the folly of setting bounds to what may be accomplished by the proper refinement of method.

- Sur un procédé destiné à évoquer les images motrices graphiques, etc.*
 CHARCOT (J. B.). Progrès Médicale, 18 Juin, 1892, p. 478.
- Sur un nouvel Appareil destiné à l'étude expérimentale des Sensations kinesthésiques.* JANET (PIERRE). Revue Philosophique, Nov. 1892, p. 506.

Charcot describes an apparatus devised by him to secure kinæsthetic writing sensations in a patient—free from contributions, from touch, pressure, sight, etc. The apparatus consists in a writing-pencil, long enough to be held by two hands, one that of the patient and the other that of the experimenter. The experimenter writes with one end of the pencil beneath a platform, and thus carries with the pencil the hand of the patient (above the platform), whose movements of finger, hand, etc., are made to reproduce his own by a combination of balances. He studies with this instrument cases of verbal blindness, in which kinæsthetic writing sensations remained intact, such patients understanding words only by tracing them. He thus establishes the reality of the phenomena of word-perception by kinæsthetic sensations (cf. cases of Sommer, J. M. Charcot, Pick, etc.), and concludes that there is a functionally distinct motor graphic center.

Janet points out the importance and convenience of the apparatus of Charcot and reports having successfully used it in demonstrating the now well-known unconscious writing movements by the kinæsthetic hands of hysterical patients.

J. M. B.

- Die Entstehung und Ausbildung des Muskelgewebes, insbesondere der Querstreifung desselben als Wirkung der Thätigkeit betrachtet:*
 EIMER. Zeitschrift für wissenschaft. Zoologie, LIII. Suppl. 67.

A detailed plea for a "physiological" conception of the development of muscle-tissue. "The morphological property is the result of functional activity." In single-celled creatures, contractile substance arises gradually out of the protoplasm. Many comparative and embryological facts are stated in the course of a survey of the animal series in support of this general view of the rise and of the striation of muscle. Working backward from the medusa, in which the striation is clear, he finds "all the stages between such definite striation and its complete disappearance." Among his interesting cases are the "breast-muscles" of flies, which he supposes to lose during the season of rest (winter) the striation gained during the flying season (summer). There are accordingly no original morphological divisions in muscle. Contraction waves leave markings which account for both the muscle fibres and the striation.

- On the Perception of Small Differences, with special reference to the Extent, Force and Time of Movement.* FULLERTON AND CATTELL. Philosophical Series, No. 2, University of Penn. Press, Philadelphia, 1892.
- The Psycho-physics of Movement.* CATTELL AND FULLERTON. Mind, N. S. I. 1892, 447.

The outcome of the valuable monograph of the authors' (first title above) with the results of experiments on the extent, force and time of movements are given in résumé by the authors themselves in the paper in *Mind* (second title above) which is in everybody's hands. We may refer the reader, therefore, to that

article for an authoritative, condensed statement of a conclusion adverse to Weber's Law, of another principle which one of the authors would substitute for Weber's Law, and of the grounds on which both these claims rest.

J. M. B.

Ueber Sensomobilität. SIGM. EXNER. *Pflüger's Archiv.* 1891, XLVIII. 592.

Following experiments (already published) of the author and Herr Pineles of Vienna, on the motor effects of sensory lesions, this paper discusses the various ways in which motor impulses are regulated or controlled by the sensations to which they give rise. The author finds three not sharply distinguished cases: 1. In reflex actions—where neither the original stimulus nor the sensation caused by the motor impulse reaches consciousness (*e. g.*, intestinal movements), or the sensation may affect consciousness (*e. g.*, contraction of the pupils) and be controlled by the will (*e. g.*, winking). This he calls *subcortical control* (*subcortical Regulierung*). 2. This subcortical action is not limited to reflexes, but may control acts which are pre-determined and are to be set in operation by some stimulus and guided by attention (*e. g.*, focusing the eyes). This is *control by determination* (*Intentionsregulierung*). 3. A conscious movement calls forth sensations which are essential to the correct execution of the movement (as in speech). This is *cortical control*. Bodily movements are in a high degree dependent on the senses. Disturbances of sensibility give rise to motor disturbances by removing one or other of the above-mentioned kinds of control.

Berlin.

H. C. WARREN.

Des Phénomènes de Synopsie. PAR TH. FLOURNOY. Paris, Alcan, 1893.

M. Flournoy includes all the phenomena of "Colored Hearing" and of "Mental Forms" under the convenient and adequate name *Synæsthesia*—in place of which, to be sure, he himself usually employs the less defensible term *Synopsie*. One of the prominent features of the book is in fact the clearness and the usefulness of terminology and of classification, an especially important merit at this time, when the reaction against the formalism of classification without observation has resulted in the opposite tendency to make of psychological records a bare, formless diary of facts. The phenomena of synæsthesia are divided into three main groups: "*photisms*," among which are included, as by Bleuler and Lehmann, all the varieties of pseudo-chromesthesia; "*Schemes*," comprising not only "forms" (*diagrammes*) associated with series of words or numbers, but "symbols," or particular figures associated with single letters, numerals, colors and the like; and "personifications," in which the associated factor is no mere color or form, but has become richer and more concrete. From the standpoint of intensity, the phenomena are "objectified," "simply imagined," "localized" or "thought;" M. Flournoy has never observed a case in which color or form is actually objectified, but admits the possibility, chiefly on the testimony of Herr Ed. Gruber. The book is the result of the detailed observation by M. Flournoy of particular cases and of a statistical investigation undertaken by M. Claparède, in which 694 answers were received to 2600 circulars of inquiry. Not the least diverting part of the book, especially to any one who

has ever undertaken statistical study, is the humorous comment upon the indifference of the public—even of a university public—to psychological inquiry. One-half of the 694 answers recorded positive facts of synæsthesia; but M. Flournoy properly concludes that most of the 1900 who failed to answer would have replied in the negative. Of the 371 positive cases, more than one-half include photisms (a conclusion entirely at variance with the results of my own observation of more than 200 cases). Forms are described in detail under the heads "*forme-matière-localisation des diagrammes*," and the text is illustrated by more than 100 reproductions of forms. The careful tabulation of the colors assigned in 943 different cases to single letters is compared with the similar formulations of Fechner and of Bleuler and Lehmann. The result is the demonstration of the apparently complete individuality and lawlessness of such identifications of colors with letters. Flournoy detects a "*Loi de clarté*," in accordance with which *i* and *e* are usually light (or bright); *a* and *o* usually of medium intensity; and *u* and *ou* dark;¹ but even this is contradicted by the results of President Jordan's observation and of the Wellesley statistics, which record *o* as commonly white or light.

Less than one-ninth (46) of M. Flournoy's subjects connect colors with consonants, while two-thirds (247) have colors with vowels. This result contradicts my own, but is founded on the study of a far larger number of cases, and accords with Galton's results. It is noticeable, however, that the form of inquiry which included consonants, diphthongs, words, music, etc., in one question, facilitated a carelessness of response at just this point.

M. Claparède's questions were indeed too simple and too condensed to permit statistical justification for many of M. Flournoy's conclusions. These are all, however, based on observation and are uniformly well-considered and undogmatic. The narrowly "physiological" theory of synæsthesia is opposed and, with a passing mention of the influence of the habitual, and of vivid, intellectual association, the chief explanation is found in an emotional association, while emotions are defined in terms of Dr. James' theory as "*sensations de retour, dues aux modifications réflexes produites dans toute l'étendue de l'organisme par [une] perception.*"

MARY WHITON CALKINS.

¹The reference of course is to the letters as pronounced in French.

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